

BrainShare bonanza At its user meeting, Novell will introduce software to simplify apps access and collaboration. **PAGE 8.**

Binding ties Enterprise application middleware eases the task of linking multiple programs. **PAGE 42.**

NetworkWorld

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March 11, 2002 ■ Volume 19, Number 10



Virtual View Storage
virtualization offers a way to aggregate physical storage assets into a single, logical pool. There are three basic roads to virtualization. Find out which one is best for your network. **Page 60.** And see how a large pension fund implemented virtualization. **Page 64.**

Carriers stay course with NYC networks

■ BY MICHAEL MARTIN AND DENISE PAPPALARDO

NEW YORK — Six months after the Sept. 11 attacks, the major carriers serving New York City have largely rebuilt their networks and, perhaps surprisingly, are sticking with essentially the same designs they relied on previously.

Verizon and AT&T officials say they were satisfied with how



their networks either held up or bounced back after the terrorist **See Six months, page 14**

Users irked by Domino moves

■ BY JOHN FONTANA

Customers say they are tired of conflicting messages from IBM and Lotus on the future of Domino and instead want a reliable road map for how the server and its underlying infrastructure will evolve.

The issue flared anew last week when Lotus confirmed it would eliminate its Domino-centric data store, including Notes Storage Facility (NSF), and replace it with IBM's DB2 database in a future version of the software.

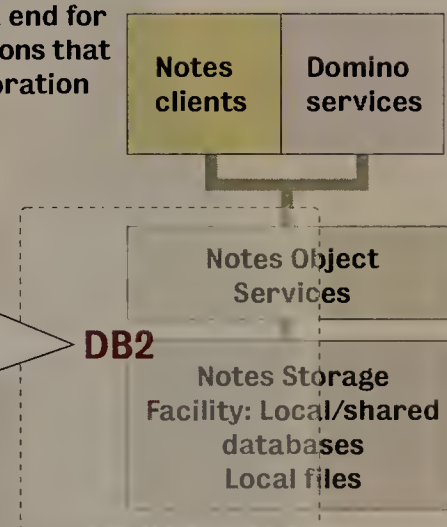
The replacement is part of IBM's strategy to use a common infrastructure consisting of its **See Lotus, page 84**

■ For more Lotus news, see page 8.

Changes within Domino

IBM has yet to detail how DB2 will replace the Domino data store, but the intent is to create an infrastructure with DB2 as the back end for Web-based applications that use Domino's collaboration components.

IBM's DB2 will eventually replace Domino's native data storage system, which is made up of Notes Object Services and Notes Storage Facility.



Phone bills facing scrutiny

■ BY DENISE PAPPALARDO

Peregrine Systems has used the acquisition route to build itself into an infrastructure management technology leader, snapping up 15 companies over a three-year span. But in doing so, the company inherited something it didn't cherish: the job of managing 20 to 30 carriers and telecom service contracts.

Last year, Peregrine called in a telecom bill auditing company, which could manage the bills and make sure Peregrine was getting the volume discounts it deserved. So far the auditor has saved Peregrine a half-million dollars, 30% of its telecom expenses.

"If I were to hire [my own] people to go through

the bills, it would have cost a fortune," says Robert Urwiler, Peregrine's CIO. "It was a no-brainer."

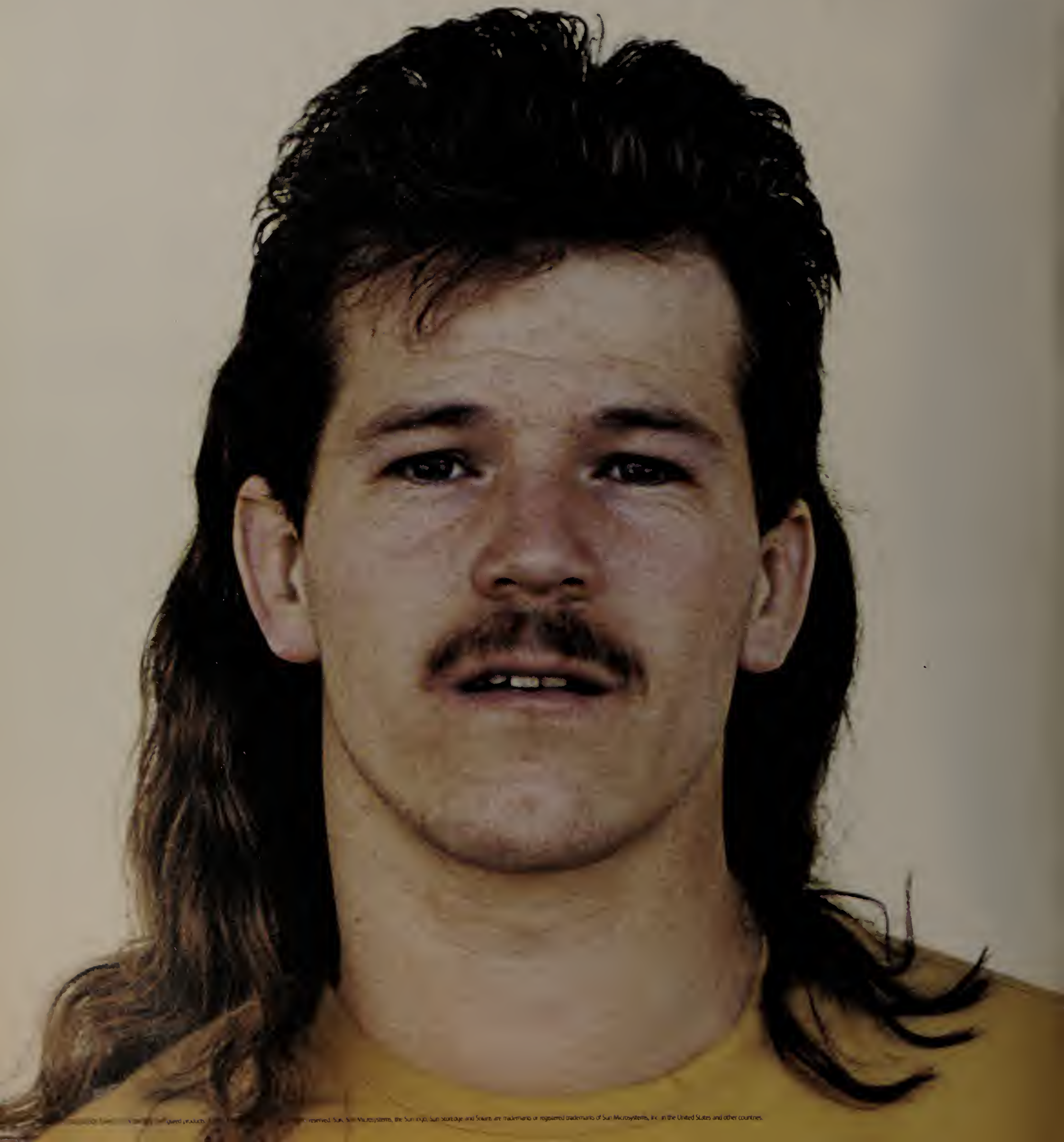
There has been a sharp increase in the use of telecom bill auditing services over the past 12 months as companies look for ways to cut expenses and get by with fewer employees in the down economy.

See Audit, page 16



Go online to see how Talbots and Sesame Workshop reduced their telecom costs by hiring auditing providers.
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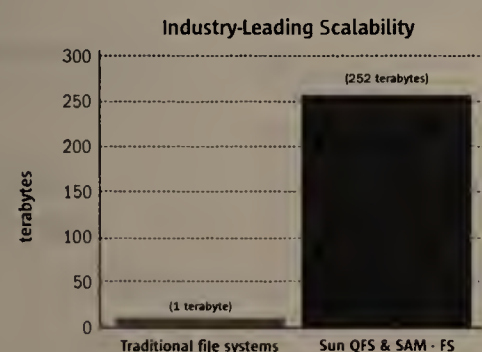
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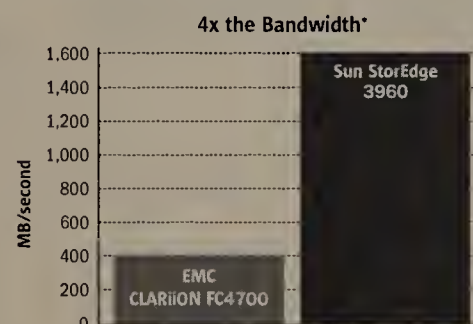
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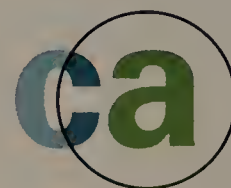
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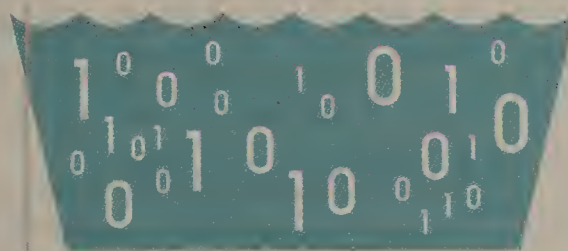
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GREG MABLY

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Tech Insider: Storage virtualization

In this report, we nail down what virtualization is and describe how the major vendors hope to achieve pooling of storage devices. **Page 60.**

Visions of virtualization:

Experts agree that the technology is not totally baked, so don't dive in too fast. **Page 61.**

Case study:

A Virginia pension fund with 1.5 terabytes of data wanted to get off the merry-go-round of upgrading RAID arrays every 18 months, so it went the virtualization route. **Page 64.**

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Forums

Set the RBOCs free

Editor in Chief John Dix says, "History has shown that service providers with the best long-term chance of thriving are those that own their own facilities." Readers share their opinions. **DocFinder: 8447**

Answers to network problems

A reader writes: "I agree that keeping a network simple is the best defense from network outages. However, the recovery time provided by Open Shortest Path First over RIP is significant enough to seriously consider OSPF in networks with multiple available paths." **DocFinder: 8448**

IBM wish list

Readers tell IBM's new CEO Sam Palmisano what enterprise users need most from the company. **DocFinder: 8449**

News

Williams taps Emperative

Williams and Emperative claim to have demonstrated automatic setup of a cross-country fiber link in 10 seconds. **DocFinder: 8450**

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Columnists

Compendium

Oude, you're not getting a Dell Fusion Executive Editor Adam Gaffin discovers a "Discussing the Dell issue" Web page that describes Dell's post-Sept. 11 sales policy. **DocFinder: 8452**

Help Desk

Reinstalling NOS
Columnist Ron Nutter helps a user reinstall Novell Directory Services. **DocFinder: 8453**

View from The Edge

Edge Managing Editor Jim Duffy reports that Caspian Networks secured \$120 million in additional funding to develop, test and market its Apeiro IP Superswitch for the Internet core. **DocFinder: 8454**

NetSmart

Voice-over-IP training

With equipment provided by Avaya, NetSmart's voice-over-IP training explains the technology behind the merging of voice and data. **DocFinder: 8056**

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We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested information.

New Bits

Sun sues Microsoft over Java

■ Sun last week filed a reported \$1 billion antitrust lawsuit against Microsoft over what it says are the software giant's past and continuing efforts to undermine Java. Sun says Microsoft engaged in a campaign of anticompetitive conduct. In part, the suit stems from Microsoft's decision to eliminate a Java Virtual Machine from Windows XP. Sun says the suit is based on past actions by Microsoft, but also accuses the company of current practices that restrict competition and threaten developers who depend on open software. Sun seeks a preliminary injunction requiring Microsoft to distribute Sun's current binary implementation of the Java plug-in as part of Windows XP and Internet Explorer, and stop distribution of Microsoft's Java Virtual Machine through separate downloads. The company also seeks a permanent injunction requiring Microsoft to disclose and license proprietary interfaces, protocols and formats, and to unbundle tied products, such as Internet Explorer and the .Net framework.

A Microsoft spokesman said the suit lacked legal or factual merit, and called it "a fairly predictable tactic by Sun."

Palm, regulators reach accord on marketing

■ After charging Palm with misrepresenting the Internet access and e-mail capabilities of its handheld devices in marketing materials, the Federal Trade Commission last week said that it had entered into a proposed settlement with the manufacturer that would force the company to clearly state what its products can actually do. The agreement would require Palm to be "clear and conspicuous" when making claims about the ability of its handhelds to perform functions that require users to purchase additional products or services, the FTC said. The agency charged Palm with representing many of its PDAs as though they came with built-in Internet and e-mail access when in fact users needed to purchase add-ons, such as modems, to have these functions. Palm spokeswoman Marlene Somsak said that although the company does not feel that it did anything wrong, it does understand the FTC's perspective. Palm has agreed to be more explicit about the capabilities of its products.

Verizon to slash another 10,000 jobs

■ Verizon plans to reduce its workforce by another 10,000 people this year, as the slow economy continues to punish the company. The telecommunication giant announced the elimination of 29,000 positions last year. Of that total, 13,000 workers were let go as a result of reduced demand for contract labor and overtime work. The 10,000 cuts discussed last

week also will fall into that category, according to a company spokeswoman. The layoffs will be spread among various business units and occur over the course of the year.

In other moves, Verizon this week will launch private-line and frame relay services on its international network. Unveiled last February, Verizon's international network will connect U.S. multinationals to branch offices in Europe, Asia and Latin America. The network is currently about 50% complete. Later this year, Verizon will offer a managed network service for sites anywhere on the international network.

Baltimore to chop CyberTrust

■ By April 1, Baltimore Technologies will stop selling the CyberTrust PKI software it acquired from GTE two years ago, but will continue to support its CyberTrust customer base for up to another three years. Baltimore's own UniCERT software now has the public-

■ The Good The Bad The Ugly



Productivity boost. At least according to VeriSign CEO Stratton Scavos, moving to Web services promises to have a big payoff. "Web services is very important because it can give us the next wave of productivity," he says.



IP's no cure-all. "Despite all the hype about IP, we don't think it's gonna pull the telecom carriers' irons out of the fire," says Robert Rosenberg, president of Insight Research, which last week issued a report concluding that IP services will grow slowly in North America.



Blah, blah, blah. As if there weren't enough awful lingo in the network industry, Cisco Senior Vice President Mike Volpi added more last week. Speaking at the Network Outlook conference, he said high-level executives now can be "scaled" to remote offices through the magic of videoconferencing. ➤



key-infrastructure-hosting functions that were a draw in the CyberTrust product, says Baltimore CEO Bijan Khezri. A question-and-answer interview with Khezri can be read on www.nwfusion.com, Docfinder: 8462.

IBM goes deeper into AmEx

■ IBM is on a roll. First its services group landed American Express in a \$4 billion, seven-year outsourcing deal announced in late February. Now the infrastructure side of the house is bringing in the dough: \$500 million over five years from food and beverage conglomerate Nestle. The \$50 billion Swiss company will use IBM gear in a global IT consolidation project that will replace 100 scattered IT sites with five new data centers. IBM will provide servers, storage products and database software to outfit the data centers, which Nestle will operate.

C&W backs off Exodus assets in Germany

■ Cable & Wireless, which completed its purchase of Exodus Communications' U.S. assets last month, has dropped plans to acquire the Web-hosting company's data center in Frankfurt, Germany. The decision not to pursue the German assets drops the approximately \$750 million value of the Exodus transaction by about \$8 million, a company spokesman says. In addition to the U.S. transaction, C&W has completed the purchase of Exodus assets in Tokyo and London, bringing the total number of data centers it acquired to 29.

House OKs tax break on net gear

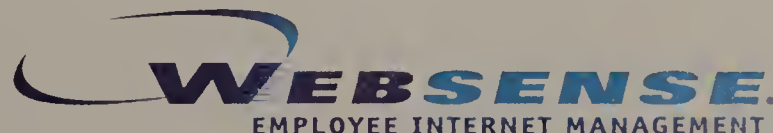
■ The U.S. House of Representatives last week passed another economic stimulus package that resurrects a corporate tax-break on purchases of network hardware and software. The proposal would let companies depreciate network purchases at a faster rate than is currently allowed. The House proposal lets companies take a 30% write-off for high-tech purchases in the first year. The measure — which is essentially a discount on new IT buys — would last for three years. Several major IT industry lobbying groups hope to make the change permanent. The measure still faces passage in the Democrat-led Senate, which has consistently rejected such changes to the tax code.



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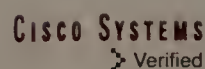
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Novell eyes apps access, collaboration

■ BY DENI CONNOR

SALT LAKE CITY — Novell's annual customer conference next week will feature a pair of new products that the company hopes will help to reverse its long slide from industry prominence.

ZENworks Synergy will let users access applications quickly from any device wherever they may be, while Novell Workspace will let them build Web-based sites where they can collaborate on tasks or projects without IT department help, the company says.

ZENworks Synergy lets IT managers provide applications to users without even knowing the devices they are using or the speed of their Internet connections, Novell says. Users can access the ZENworks Synergy Web portal from devices IT knows nothing about and automatically access applications tailored to the device without IT assistance.

With Synergy, IT managers will save time troubleshooting user connections to the Internet — Novell says they can devise rules for how applications should be supplied to particular devices and connections.

For instance, a mobile user on a 56K bit/sec connection is

queried by ZENworks Synergy after authenticating to the portal. Synergy invokes a rule that says all programs running on connections less than 128K bit/sec will be supplied as thin-client Citrix MetaFrame or Windows Terminal applications. A user with a fully configured local desktop computer would see his or her application as a traditional fat client.

ZENworks Synergy is a bundle of existing products consisting of Novell Portal Service (NPS), OnDemand Services and ZENworks for Desktops (ZfD). NPS provides the framework for Web access; ZfD supplies the function that inventories devices for their CPU and modem speed; and ZfD and OnDemand contain the policy engine that lets IT managers set rules on application access.

Users are enthused by the potential of Synergy.

"[The company] has so many great products that each do amazing things, but there are very few people that know the full capabilities and what tying them together can mean," says Aidan Garcia, assistant vice president of network services for Eastern Bank in Lynn, Mass. "That's been holding Novell back."

Garcia, who already uses ZENworks for Desktops and is testing NPS, can think of many instances that would call for Synergy.

"We have iPaks, Palms, Black-Berrys, Web-phone access and users on desktops and remote users on laptops," he says. "Little by little, we are seeing users traveling outside the bank [with different devices]. I've had 30 to 40 requests [for remote access] in the last month."

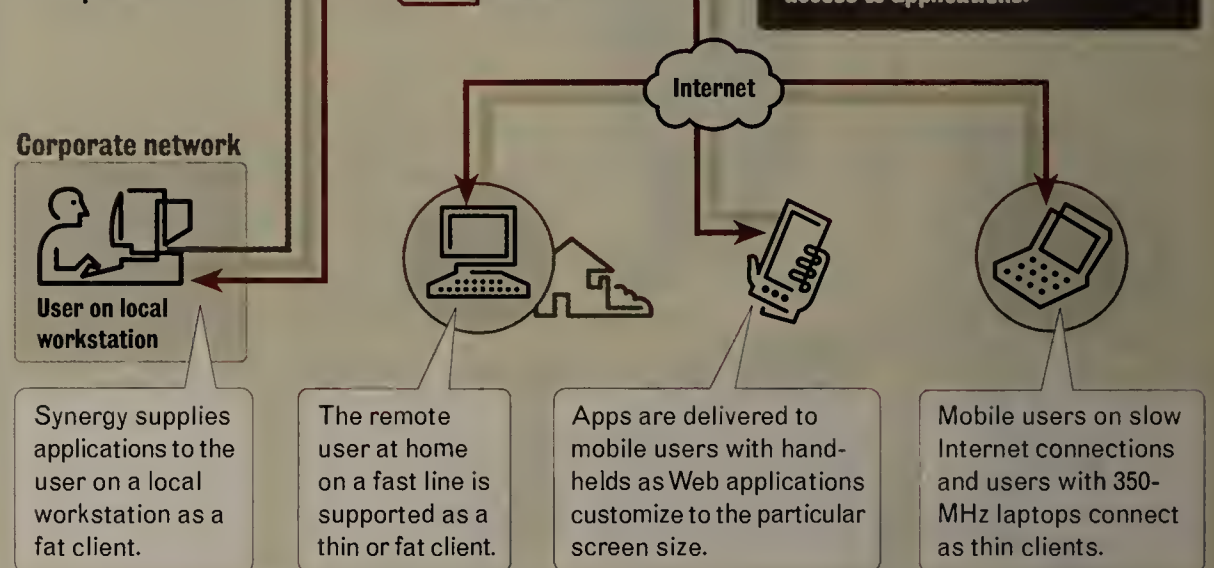
It takes a tremendous amount of time responding to each request, Garcia says.

ZENworks Synergy would be useful if "you could standardize with policies and let users access applications the way they want to," Garcia says.

With ZENworks Synergy, Novell provides installation, configuration and deployment guides on a Web site that assists the IT manager through implementation.

Bridging different devices

Novell's ZENworks Synergy software provides application access from multiple devices.



As for the second product being announced at BrainShare, Novell Workspace will let teams work together more closely.

A group responsible for organizing a corporate event could build a Web site for tracking tasks and sharing documents, e-mail, meetings or discussions. Documents they create are placed in shared file cabinets. A vital-signs page shows users how the project is progressing. Individual users also can keep their

own lists of tasks to accomplish.

Chris Brinkworth, CTO of Juritek, a legal collaboration service firm in Minneapolis, says Novell Workspace will be a boon to his business.

"Our client's business [is such that they] must have constant communication and collaboration with co-counsel who are spread out geographically," Brinkworth says.

Workspace competes with products from eRoom Technology

and Groove Networks. It differs from eRoom in that it has collaboration tools. Groove is different because it is distributed across computers rather than based on a single server site.

ZENworks Synergy will be available next quarter for \$159 per user. Users who already own one of the products such as ZENworks for Desktops will be charged less. Novell Workplace will be available midyear. Pricing has not been announced. ■

Lotus community restores another piece of Domino puzzle

■ BY JOHN FONTANA

The user-based revolution to replace Java technology Lotus removed earlier this year from the forthcoming Domino 6 is making another leap forward with a tool that adds Java Server Pages to Notes databases.

Jagre, a Lotus development tools vendor, has created the capability in technology called Jasper. This is an add-on to the Domino Designer, the client-side Notes application development environment.

"You can edit JSPs in Jasper, save them to a Notes database

and replicate those databases throughout your Domino environment," says James Greene, president of Jagre. "When you create a new page in Designer, Jasper is a new option on the menu bar."

Greene's work complements the efforts of Notes Open Source Software Organization (Notes-OSS), which is working on a serverside project called Crimson that links Domino to any JSP engine. Crimson lets JSPs from Notes databases be loaded onto a JSP engine and executed. JSP is a simple programming vehicle for displaying dynamic content

on a Web page.

"These efforts reflect that there is a clear desire to make sure there is the ability to serve JSPs from Domino," says Matt Cain, an analyst with Meta Group.

In January, Lotus shocked many users by unexpectedly pulling from Domino 6, set to ship this fall, a technology called Garnet, a JSP engine and development tool built into the software. Instead, Lotus will couple Domino with IBM's WebSphere.

IT executives had hoped to have Garnet so they could unite the replication features of Do-

See Garnet, page 84



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THIS WEEK'S QUESTION:

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Cost-cutting all the rage at IBM user conference

■ BY ANN BEDNARZ

NASHVILLE — Ken Mazer and Mike Little came to last week's Share IBM user group conference for one reason: bargain schooling.

"It's the cheapest place you can go to get the most diverse training information," says Mazer, a systems programmer at the IRS, who, along with Little, is responsible for handling operating system and hardware installations for the agency's IBM z900 platform.

Some 2,100 IBM users met in Nashville for Share's semiannual conference, which consists of about 1,000 sessions including tutorials, product previews, user case studies and hands-on labs.

While it wasn't a stated objective, the idea of getting more mileage out of fewer IT dollars surfaced in many sessions. Cost-cutting advice ranged from how to negotiate a better software deal, to using Linux to reduce operational costs, to exploring freeware, shareware and open source software options (see graphic).

David Ochroch, senior consultant at Reiner Associates, shared tips for negotiating software purchases. For one, he says to bring in the competition for demonstrations and trial runs. If your company's business depends on a single vendor's products, "threats about changing products are not going to be taken very seriously," he says. If there are no alternatives, aim to negotiate a long-term contract with price protections.

Ochroch also suggests that if you're in an IT procurement role, make friends with remote staff who are purchasing software. Achieving centralized IT procurement is a commonly cited cure-all, but it's not always possible, particularly in companies that have acquired but not yet integrated other businesses, Ochroch says.

If you can't enforce centralized procurement, try to minimize the damage by broadcasting all volume-purchase agreements and requests for proposal to the distributed procurement team.

A centralized system for tracking software renewals, maintenance contracts and negotiated price caps is critical, Ochroch says. One oversight — such as forgetting to renew a corporate Web domain name — can cost much more to remedy than the renewal would have. Finally, publicize and reward staff for IT spending reductions, Ochroch says. "I've seen very few companies with good IT compensation systems," he says. "Most don't reward for incremental savings."

Paul Giangarra, IBM senior technical staff member, tackled designing a high-volume e-business site — a task he is undertaking in his temporary role as CTO of the Office of the e-Envoy in the U.K. Cabinet. Understanding and designing for Web site traffic patterns is key, Giangarra says. At one online stock-trading site, 40% of visitors requested a quote, but only 3% conducted a trade. Knowing this information, the company could cache its quota

Free stuff

Lynda Jones of Symcor Services pointed Share attendees to a cornucopia of freeware, shareware and open source software.

Web assistants

HotLinks and Blink store a copy of your Web bookmarks in the event your PC crashes. But there's a caveat: They track your online behavior. WebCopier duplicates Web sites and stores them locally for offline browsing. www.hotlinks.com; www.blink.com; www.maximumsoft.com

Terminal emulator

Virtual Network Computing is a display system for remote desktops, similar to pcAnywhere.

www.uk.research.att.com/vnc

Download manager

GNU wget handles FTP and HTTP downloads, and Xitami lets you build your own FTP server.

www.gnu.org/software/wget/wget.html; www.imatix.com/html/xitami/index.htm

Firewalls and more

Tiny Personal Firewall and ZoneAlarm are free for personal use. ShieldsUP! from Gibson Research tests the effectiveness of firewalls. www.tinysoftware.com; www.zonelabs.com; www.grc.com

Privacy tools

Anonymizer.com shows you what your cache reveals about you. See who's hacking you with Nessus, a free utility, or try out limited services from QualysGuard and eEye Digital Security. www.anonymizer.com; www.nessus.org; www.eeye.com; www.qualys.com

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queries, speeding transaction times.

By selectively applying techniques such as load balancing and caching, companies can design for better performance, which in turn can protect against revenue loss. Giangarra cited a Zona Research estimate that slow performance costs e-commerce sites \$362 million per month.

Another key savings recommendation: Take advantage of IBM's Linux push, says Stan King, president of system integrator Information Technology Company. "Linux is such a major focus for IBM that the best deals with deepest discounts can be had if there is even a hint of Linux implementation in a customer request for bid," King says.

In a session on entry-level mainframes, King said IBM's z800 Linux-only system is the most cost-effective System 390 mainframe environment he's seen. "Not only do you get [a full mainframe], but you also get it at a price that is incredibly reasonable," King says.

The price for a z/800 Linux machine is \$150,000. Based on customer experience, King suggests buyers aim for a discount of between \$30,000 and \$45,000 off the reference price of a z/800 Linux-only model.

King also advised users to consider consolidating server functions on a mainframe rather than operating a mainframe plus a server farm. Linux on the System 390 could process traditional workloads, such as z/OS, VM and VSE, and Linux server functions, he says. "The cost savings experienced when the processing load of a room full of servers is migrated to a single S/390 platform can be quite substantial." ■

Vendor extends tool for syncing up handhelds

■ BY JOHN COX

Upgraded synchronization software from Extended Systems is intended to give network executives a better grip on proliferating handheld devices.

The Professional Edition of XTNDConnect Server 3.0 includes features for smoother centralized setup of client software. Other features are designed to simplify how end users work with the software and to improve the efficiency of its e-mail and database synchronization tasks.

The company focuses on a wider set of capabilities than is found in some rival products. It supports the three major client operating systems found in handhelds: Palm OS, Microsoft Pocket PC and Symbian's Epoc. And XTNDConnect Server can synchronize not just Microsoft Exchange and Lotus Notes e-mail, but any database that uses the Open Database Connectivity interface.

There are drawbacks. One is that XTNDConnect Server is a client-server application. The client part of the application has to be set up, then loaded onto each handheld device, by flashcards sent to the users, or manually. Later updates are distributed whenever users synchronize with the server.

"This is an area we're looking at standardizing and automating in the future," says Jeff Warner, XTNDConnect product manager.

The upgraded product has a new deployment program that guides the user through a series of steps. Using the wizard, network managers can set up the XTNDConnect client for single users or groups. Among other things, they can set IP addresses, server names and security settings.

They also can create up to eight "profiles" for end users. The profiles reflect different usage patterns based on the available bandwidth, whether the device is being inserted into a cradle or accessing XTNDConnect Server via a dial-up connection.

These profiles can be preset and locked so end users can't change them, or users can be authorized to change some or all of them. Users can click between each profile as they move from the corporate office to a wireless modem on the road.

In this release, Extended has improved integration with Microsoft Management Console, letting MMC applications track and control a wider range of XTNDConnect server and client information.

The company also has licensed Certicom's elliptical curve encryption software, which uses the 128-bit Advanced Encryption Standard.

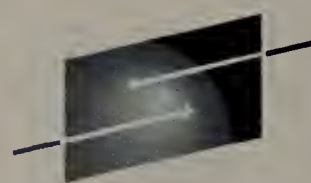
QuickMail is a new feature that uses a modified version of Extended's e-mail protocol.

The change lets XTNDConnect Server register with an Exchange or Notes server and be notified when mail arrives for each user. When the user logs on using QuickMail, a streamlined process downloads the new e-mail but blocks any other synchronizations.

The new version also includes a new mail client, called Mail Plus, for Palm OS users. The client can work with mail attachments: Users select which attachment they want to download, and XTNDConnect Server converts it into a format viewable on the Palm OS handheld.

XTNDConnect Server Professional Edition is available now for \$150 per user, based on a 100-user purchase.

Extended: www.extendedsystems.com



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OpenView users lament HP's integration delays

Customers want Hewlett-Packard to integrate acquired performance management technology faster.

■ BY DENISE DUBIE

BURLINGTON, MASS. — Although Hewlett-Packard moved quickly to rename software it acquired from network performance management vendor Trinagy last year, users say the company needs to work just as fast to integrate the technology with other OpenView management software or they may not bring it into their networks.

At the inaugural meeting last week of the New England Chapter of OpenView Forum International last week, more than 60 users saw a demonstration of HP OpenView Performance Insight for Networks, the first performance management software resulting from the August 2001 acquisition of Trinagy (www.nwfusion.com, DocFinder: 8460). Users initially seemed interested in the demo but balked when they learned of the Sybase database on the back end.

"Frankly, I won't be touching this with Sybase attached," one user said during the demonstration.

HP OpenView Performance Insight for Networks is based on Trinagy's Trend software, which uses Sybase's database, while HP has built its OpenView line to work with Oracle databases. The databases store and manage all data collected by the software from network servers, devices and applications. Because nearly all management software needs extensive configuration when installed, introducing a new database or utilizing two different databases for similar software would consume many staff hours in configuration time and create performance problems if data is shared between databases.

The company announced the performance products and road map last November with a slew of other OpenView products (www.nwfusion.com, DocFinder: 8461). HP says it plans to move the former Trinagy software from the Adaptive Server Enterprise (formerly called Sybase SQL Server) by year-end. The availability of the repackaged Trinagy product into the OpenView portfolio might have come too soon for some users.

Jim Maas, senior monitoring engineer at NaviSite in Andover, Mass., says he'll wait until the performance products work with

“It's one thing if [HP doesn't] integrate it for new customers, but if they have existing customers waiting for their two software products now offered by one vendor to integrate, they should get to work.”

Paul Bugala
Senior analyst, IDC

Oracle. A three-year user of HP's core network management software, Network Node Manager, Maas says his company is still deciding whether HP has the performance reporting it wants. But he adds that until the product runs on Oracle, it will not run in his network. Aside from the cost and time it would take to purchase, set up and maintain an additional database, Maas says he'd rather work with Oracle.

"[Sybase] SQL is not the easiest to work with. I've come into a lot of problems using it," Maas says. He says that setting up reports on Unix and getting them to work with the Oracle database is "a lot easier" than it is with a Sybase database.

Paul Bugala, senior analyst with IDC, says HP will have to make a substantial investment to move the performance management product from Sybase to Oracle,

but the company would be wise to make that investment rather than think its customers will. And waiting close to 18 months after an acquisition to move the product from one database to another could disappoint users, he says.

HP and Trinagy users overlap to some degree, Bugala says, with about 65% of the more than 500 Trinagy customers also using OpenView. "It's one thing if they don't integrate it for new customers, but if they have existing customers waiting for their two software products now offered by one vendor to integrate, they should get to work," he says.

Purchasing performance management software from HP becomes an integration and price issue, says OpenView user David Szacik, senior network manager at the Northfield, N.H. offices of Freudenberg-NOK, an automotive parts maker.

He says the Sybase database and the cost of the performance software — which can range from \$68,500 as stand-alone software, to \$82,200 with service and support bundled in — have prompted him to evaluate performance products from other vendors along with HP.

"Even if it is a canned, self-contained database for the performance product, the product would be polling and working with other products on the network," he says. "Integration is very important, but the dollar signs are also an issue."

HP: www.hp.com

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Keynote upgrades Web site benchmarking

■ BY DENISE DUBIE

SAN MATEO, CALIF. — Keynote Systems, known largely for its Web site benchmarking technologies, is readying upgraded services designed to help users better pinpoint the causes of poor Web site performance.

The company's Web Site Perspective 6.0 and Transaction Perspective 4.0 services feature new software agents that now check for troubles based on user-defined frequencies and thresholds, which users customize to their Web sites to show whether service-level agreements are being met.

The agents can identify whether problems stem from network connectivity issues or from how applications are designed.

Until now, the company has largely focused on letting customers determine how well their Web sites are performing, by doing such things as comparing the average time it takes for a site visitor to download a particular page vs. a similar page on a competitor's site.

"Keynote is [now] giving IT operations the ability to set their own thresholds and drill down



“With most IT problems, 90% of the solution lies in diagnosis, 10% in the fixing.”

Umang Gupta
CEO, Keynote Systems

into the specifics of what's causing problems with the data Keynote has always collected for benchmarking purposes," says Dennis Gaughan, an analyst with AMR. "It's a service, but users can use it like a software tool to diagnose performance problems."

Keynote deploys traffic-generating agents across the Internet that simulate the end-user experience with any given Web page.

The Web Perspective subscription service tests if Web site performance varies among geographic locations or from various service providers. Now it also can determine if the cause of the problem lies behind the Keynote user's firewall.

Transaction Perspective works atop Microsoft's Internet Ex-

plorer browser and measures how long it takes to go through each step of the process of locating information on a Web site or making a purchase.

Jeb Bolding, an analyst with Enterprise Management Associates, says Keynote is in the beginning stages of offering customers an "end-to-end" view of Web site performance from the end user experience through to back-end systems, but is not quite there yet.

He says the services can determine how any transaction performs, but once inside the user's firewall, Keynote can't pinpoint if the problem lies within the database or an enterprise resource planning application, for example.

The company, which partners with vendors such as Computer Associates to extend the capabilities of its services, competes with a mix of service providers and, increasingly, software vendors. These include Mercury Interactive and BMC Software.

While the company is a leader in what it describes as a \$50 million benchmarking market, it is aggressively pursuing an application performance monitoring market that it pegs at \$2.7 billion.

Although the new services can help companies locate problems, Keynote's technology does not actually fix problems for customers. But it's the diagnosis of problems that customers need the most help with, CEO Umang Gupta says.

"With most IT problems, 90% of the solution lies in diagnosis, 10% in the fixing," he says.

Keynote will begin offering Web Site Perspective 6.0 on March 18, while Transaction Perspective 4.0 will be available in June.

The services cost from: \$395 to \$1,895 monthly per URL; \$995 to \$3,995 monthly per five-step transaction; and \$495 to \$695 monthly per stream.

Keynote: www.keynote.com

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Six months

continued from page 1

attacks, so they see no need for network overhauls. While WorldCom officials also say their company's network performed well, it appears to be the most aggressive of the carriers in making changes based on lessons learned.

"We're scrubbing through the entire network and checking everything that can be improved," says George Kushin, director of business continuity services at WorldCom.

The consensus among customers, carriers and industry observers after the attacks was that the decentralized Internet outshone the more centralized telecom-

nesses slowly move back into the area around the World Trade Center site, other orders to restore may emerge.

Verizon's focus is on getting customers off the temporary networks it has running over cables lying aboveground and to move them onto the new rings Verizon is burying. Construction of the new permanent network downtown has just begun, so moving all customers over could take another eight to 12 months, says Joe DeMauro, Verizon's regional president for cabling in the affected area.

While the new network is essentially like the old one, there are differences. Verizon has installed better-quality inter-central-office fiber to replace the links destroyed at its damaged site at 140 West St., which had a hole punctured in its wall when the 7 World Trade Center building collapsed onto the central office. And in buildings where Verizon engineers determine there will be enough traffic demand, the carrier is replacing copper connections with fiber.

"If customers in those buildings wanted to upgrade from multiple T-1s to a T-3, we could accommodate that now," he says.

Switches at the West Street central office were a mixed bag. Two Nortel DMS 100 switches were quickly restored, but two Lucent 5ESS switches were problematic.

"They were so caked in dirt and in some points the dirt was so heavy that we had to literally shovel it away from the switches," Rosenzweig says.

After the switches were powered up and thoroughly cleaned, technicians began replacing damaged components. Finally, the switches had to be reprogrammed.

Ultimately, three of the four switches will be replaced, he says, as were eight of 13 digital access cross connect systems.

Verizon's rebuilding effort contributed to the carrier's \$2 billion in losses over the final three months of 2001.

"In today's economic environment would I do it differently?" Rosenzweig asks. "The



Verizon needed about two months to rebuild its 140 West St. central office after the Sept. 11 attacks.

answer is no. If someone said, 'Here's a blank check, go rebuild the network,' then yes, there are some things I might do."

AT&T, which had a few thousand customers in New York connected to its own local facilities, rebuilt its network within 60 days.

"The major lesson we learned is our network did exactly what it was supposed to do," says Dave Johnson, an AT&T spokesman. "We're not planning any major changes."

Customers don't appear to be calling on the service providers to overhaul their networks.

"Verizon and AT&T both came through above and beyond for us," says Bruce Baulch, senior director of IT for Mount Sinai NYU Health Services in New York.

Baulch oversees the IT needs of five hospitals in Manhattan. One of those is the NYU Downtown Hospital. On Sept. 11, the hospital, which had redundant connections, lost its data and voice service when the two central offices to which it was linked — one in the World Trade Center and the other at 140 West St. — were knocked out.

Within four days, Verizon and AT&T had laid cable in the street to reconnect the hospital.

"I know they're competitors, but they were volunteering to fix one another's circuits," Baulch says.

Baulch wasn't as impressed with some of his other carriers.

"It was business as usual for them," he says. "We'd call them, get a trouble ticket and a promise of a call back the next day. They treated us like we were a New York deli — not a hospital."

One step Baulch is taking in the wake of the attacks is to increase the hospitals' redundancy efforts.

Several circuits from MCI, which were supposed to provide some redundancy, all ran into a central office at the

World Trade Center, Baulch says. When that central office went down, the hospitals lost all their MCI circuits, which Baulch is replacing now with lines from Verizon and AT&T that run into multiple central offices.

WorldCom also is taking a close look at its operations.

"There is an increased vigilance and a lot of focus on what-ifs after something like this happens," WorldCom's Kushin says.

There are broad efforts in place looking at increased physical security and considering events that wouldn't have been thought of before, he says.

For instance, WorldCom has two hazardous-materials (haz-mat) teams that specialize in repairing networks in areas where dangerous chemicals are present. WorldCom developed these teams prior to Sept. 11 to respond to specific network outages in areas where a chemical spill may have occurred. The carrier is looking at ways to have its haz-mat teams more readily available in more parts of the country so they can respond as quickly as possible to a what-if situation.

The carrier also is putting programs in place based on how it reacted to customers in New York City. WorldCom shipped 500 pagers to customers to help them keep in touch with their employees after the attacks. WorldCom also relocated some of its own employees from midtown Manhattan to make office space available to customers who either no longer had office space or couldn't get to their office buildings.

Kushin says WorldCom is formalizing programs in which some of these measures would be taken right away.

While carriers may have done a good job getting customers back up and running, service providers weren't perfect in ensuring their business customers had the redundant networks they thought they had, notes Anibal Filipe, director of network design and engineering for New York and New Jersey for Predictive Systems, a network integrator.

To protect themselves, companies need to obtain routing information from their providers that will let the companies test their circuits to ensure they are in fact redundant. ■

“They were so caked in dirt and in some points the dirt was so heavy that we had to literally shovel it away from the switches.”

Dave Rosenzweig

Vice president of network operations, Verizon

munications networks. But industry watchers also say Verizon and the other carriers performed admirably under the circumstances, though many raised questions about whether the networks were too centralized in their designs. Verizon's West Street central office next to the World Trade Center, for instance, supported 200,000 voice lines and 3 million private lines before Sept. 11, and its Broad Street office handled 80% of the New York Stock Exchange and Nasdaq telecom needs.

For Verizon, it took 4 million rebuilt or rerouted voice and data circuits, 3,000 technicians and managers, and 18 new SONET rings to get its network in lower Manhattan back in order. All was done in two months.

Verizon has restored service to all customers who have contacted the company, says Dave Rosenzweig, vice president of network operations in New York and New England. However, as residents and busi-

Restoring power

The Sept. 11 attacks devastated Verizon's 140 West St. central office. Rebuilding efforts began on Sept. 12 and were largely complete by December. Since Sept. 11 Verizon has restored:

- 100,000 business voice lines.
- 200,000 residential voice lines.
- 3.6 million data circuits.
- 10 cellular towers.



Verizon workers lay down cable in the wake of the attacks.



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Audit

continued from page 1

"What's driving the boom in the telecom bill auditing and management industry is the fact that enterprises don't have the staff to take care of this in-house," says David Neil, a vice president at Gartner. "Most enterprises have had some degree of layoffs in the last year or have frozen their headcount."

Telecom bill auditing and management companies such as ProfitLine are reporting increased revenues and requests for proposals (RFP) for their services.

"During bad economic times our business grows even faster," says Rick Valencia, CEO at ProfitLine. While the company has consistently grown by 75% during the last three years, ProfitLine doubled its revenue from 2000 to 2001 and expects to boast a similar increase this year.

"Up until last year, we were having to make outbound calls explaining the benefits of bill management. Now we're getting unsolicited RFPs from Fortune 500 companies," he says.

Bill management and auditing company Teletron has seen the number of RFPs it receives jump since January. "We used to get one RFP every other week, now we're getting two to three every week," says Tim Lybrook, the company's CEO. Another bill management company, Teldata Control, says its revenue grew 60% last year compared with 30% to 40% the year before.

Underlying the move to telecom auditing services is the widely held belief among users and industry watchers that carriers often are inept when it comes to billing and that their mistakes can cost users a bundle.

"Service providers are notorious for having standard errors in their invoices," Neil says. Typical errors range from charging for T-1 lines that should have been disconnected to volume discounts that are never applied. Not only do the auditing companies find errors, but they also negotiate with the carriers until their clients receive restitution.

Several companies that started in the basic bill auditing business now offer complete telecom bill management services. These services let users send all their voice, data and mobile

Penny pinching

Users can choose from many telecom audit and bill management companies to reduce their monthly telecom expenses. While all offer bill auditing, not all offer ongoing invoice management.

Company name	Monthly bill management	Contingency fee	Flat fee	Web site
Access Utilities		X		www.acutil.com
MSS Group	X		X	www.mssgroup.com
ProfitLine	X	X	X	www.profitline.com
Tariff Research		X		www.tariffresearchinc.com
Teldata Control	X	X	X	www.teldatacontrol.com
Teletron	X		X	www.teletron.com
Utility Audit Services		X		www.utilityauditservices.com

invoices to a third party, which scours them for errors, provides departmental bill-back services outlined by the user and handles direct bill payment.

Call in the auditors

Relizon, which develops billing forms and generates nearly \$1 billion in annual revenue, late last year handed over its telecom bill management to Teltron. The goal: drive down costs and make better use of Relizon's telecom staff, says Kevin Werst, manager of communications services at the Dayton, Ohio, company.

Relizon expects to save a minimum of \$93,000 this year, but Werst says this is a "pretty conservative number. That's an easy number for them to hit, while still working hard for us."

Before working with Teltron, two clerks in Relizon's telecom department handled all the telecom billing. "We didn't feel it was a very good fit because we were not analyzing costs, and it was so detached from the main core of accounting," Werst says.

By outsourcing, Werst has been able to redeploy the two clerks to work with his telecom team on a project to move to a new building. The timing was important because Relizon is operating under a wage and hiring freeze. Not only was Werst able to free up internal staffers, he is saving his company money.

Teltron receives all of Relizon's voice and data telecommunications bills, then analyzes them and pays the invoices on behalf of Relizon.

Teltron then sends Relizon's

accounting department detailed bill-back information based on predefined parameters.

Peregrine also was looking for a full-service telecom billing partner, which is why it teamed up with ProfitLine. Peregrine was looking to simplify its multiple invoices while reducing its recurring telecom costs.

While Peregrine grew very quickly through acquisitions, it wasn't benefiting from volume discounts and lower rates that larger companies typically are offered. It was important for Peregrine to consolidate its invoices where it could and to verify it was getting the best deals possible.

ProfitLine goes through Peregrine's voice, data and mobile bills every month, scanning them for inaccuracies and ensuring Peregrine benefits from all the appropriate discounts each service provider offers.

Peregrine pays ProfitLine a flat fee for its telecom bill management services, so the user keeps all of the cost savings ProfitLine recovers.

Contingency vs. flat fee

Flat fees are popular among telecom auditing customers, but many users pay based on a percentage of savings recovered by the auditor.

"We don't like to argue with customers over savings, and we find that fixed fees are better for long-term relationships," says Roger Ousteky, CEO at bill management firm MSS Group.

Contingency billing can create bad feelings, especially if a customer finds an error and the savings associated with that error are part of the total contingency findings. "We only work on a fixed-fee basis, no contingency fees," he says.

This was one of the main reasons why railway company Burlington Northern Santa Fe in Fort Worth, Texas, hired MSS Group about a year ago, moving from a service with contingency-based fees.

"We wanted to move into a more full-service type of audit where we aren't arguing about contingency pay," says John Hicks, the railway's director of unified messaging services.

The company had employees in its accounts payable department who handled all telecom bills each month, but it wasn't working out. After teaming with MSS Group, Burlington was able to "free up resources within the company to focus on other things," Hicks says.

Since hiring MSS Group, Burlington has cut its monthly circuit expenses by 3%. Hicks wouldn't get into specific dollar figures, but such a percentage savings could save a company thousands of dollars per month.

"To understand exactly what you're paying for, you need trained professionals to look over each and every one of those invoices," he says.

"We're renegotiating contracts on an annual basis and with some carriers every eight months. Discounts that we negotiated need then to be applied to our thousands of invoices. This is very difficult to do without trained personnel," he adds.

Burlington had been trying to manage its expenses through a contingency-based service long before the economy turned sour, but Hicks says the flat-fee service is ideal for the current environment. ■



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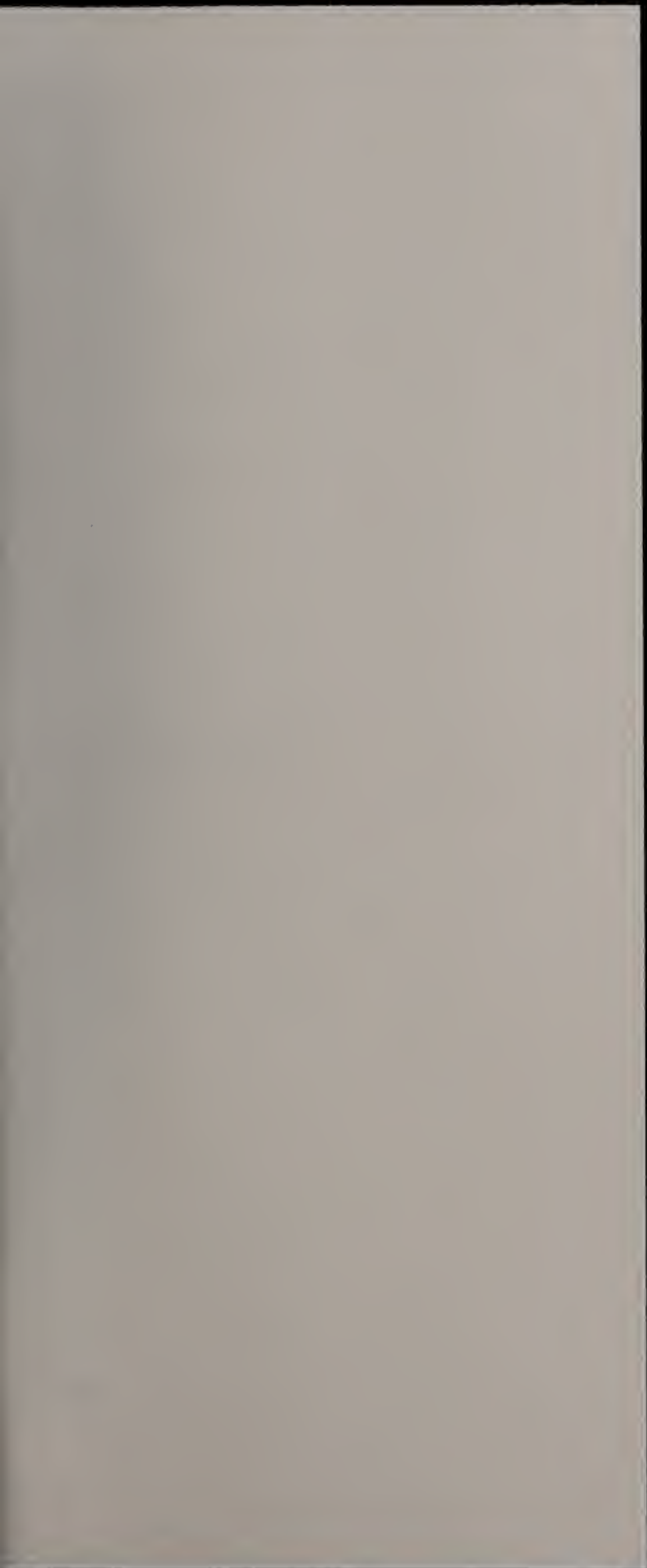
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Common Sense About Uncommon THREATS

Cisco leads the way
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Today's competing demands of network openness and security pose a challenge to network managers and enterprise executives alike. While IT professionals have tried deploying best-of-breed solutions, they quickly find that there is no substitute for a comprehensive, pervasive and integrated network security—a layered solution.

Providing both threat identification and mitigation technology, the Cisco Intrusion Detection System (IDS) is just such a solution. Moreover, Cisco IDS is a dynamic security component of Cisco's end-to-end security solution that has been engineered from the ground up to support the broadest range of network deployments, from small businesses to large enterprises.

Cisco's IDS is a critical element of SAFE, the company's best practices security blueprint, designed to launch e-business into the future. SAFE determines which security solutions you should deploy throughout your network via custom-designed modules that simplify network security design, rollout and management. The enterprise gets immediate and clear benefits from SAFE:

- A solid foundation for migrating to secure and cost-effective converged networks
- Cost-efficient deployment of a modular, scalable security framework
- Integrated network protection with the highest-level network security products and services.

The bottom line of SAFE, which provides integrated components, is a quicker, less expensive deployment. This translates into faster time-to-market of your e-business applications and optimal return on investment from those applications.

Within this dynamic SAFE blueprint, IDS provides

pervasive intrusion protection. IDS takes a holistic approach to intrusion security, beginning with an understanding of the broad nature of attacks.

Today's enterprises comprise a complex mix of systems and platforms. This situation strongly suggests a comprehensive network security and intrusion protection solution, such as IDS.

IDS includes both network and host intrusion detection components, with the host component protecting the servers against attacks on the applications and operating system (see "Stopping Them at the Host"). The Cisco IDS portfolio is a key component of the Cisco Architecture for Voice, Video and Integrated Data (AVVID). The portfolio devices span the network, switch, host, router and firewall infrastructures.

The Cisco IDS also incorporates network-integrated technology, such as the Cisco Catalyst 6500 IDS Module and software-based router and firewall images. With key features and characteristics including dynamic response capabilities, scalability and performance, and security visibility, Cisco's IDS is the industry's first enterprise-scale intrusion detection system.

Specifically, the recently released Cisco IDS 3.0 software for Cisco 4200 Series appliances enables automatic distribution of signatures and rapid updates of attack signatures, as well as provides a robust signature language allowing customers to write their own complex signatures. IDS Network Sensor also features active response



The Cisco Catalyst 6500 IDS Module is designed to integrate IDS functionality directly into the Cisco Catalyst 6500 Series Switches.

support for the Cisco PIX Firewall family and Cisco Catalyst 6500 Series Switches.

Cisco IDS 3.0 answers the key challenge of event monitoring—namely reducing the occurrence of false positives. This effectively shrinks network administration costs because staff can focus on real alarms instead of chasing false ones. Other key features of IDS Network Sensor include:

- Active response, allowing users to configure systems to automatically shun or eliminate specific connections by changing access control lists on Cisco routers, switches and firewalls
- Sophisticated detection of network attacks utilizing complex fragment reassembly algorithms, extensive web de-obfuscation analysis and robust protocol decodes developed by the renowned Cisco Countermeasures Research Team (C-CRT) to combat hacker and insider threats
- Unique protection against distributed denial of service (DDoS) attacks by detecting communications between DDoS agents and the hacker for known DDoS tools
- Comprehensive detection of application attacks covering multiple application protocols.

Another key element of IDS is the Cisco award-winning Catalyst 6500 IDS Module, which reflects Cisco's ongoing effort to migrate network security directly into the infrastructure as an intelligent service rather than as an add-on component.

The Catalyst 6500 IDS Module addresses switched environments by integrating the IDS functionality directly into the switch. This allows users to monitor traffic directly off the switch backplane rather than having to utilize external SPAN ports.

With other sensing platforms and network security appliances, and security management and monitoring options within IDS, Cisco offers the most comprehensive, integrated intrusion solution available.



Stopping Them at the Host

The host provides application services, and thus is highly visible on the network and a common target of attack. It also presents some formidable security challenges, owing to the sheer number of different host platforms, operating systems and applications in the enterprise today.

The Cisco IDS Host Sensor, powered by Entercept™, identifies and blocks attacks before any unauthorized transactions or intrusions can occur. Where other host defense systems merely detect a problem, Host Sensor mitigates potential damage because it is preventive in nature. This results in optimal system availability, which leads to optimal return on investment of the system itself.

"The Cisco IDS Host Sensor is an important extension of Cisco's security monitoring and management portfolio, giving customers comprehensive network and host-based intrusion detection capabilities," says Richard Palmer, VP and general manager of Cisco VPN and Security Service. "It exemplifies Cisco's commitment to provide practical security solutions for e-business."

Host Sensor is installed on each server, guarding both the operating system and the applications it supports, providing protection from threats like Code Red. Employing unique interception techniques, Host Sensor's key features include:

- On-the-spot attack prevention, due to its ability to prevent attacks at the system call level before they execute
- Prevention of buffer overflow attacks by identifying the execution of the injected code and preventing the most commonly exploited vulnerability from compromising the system
- Upgraded integrity resulting from the sensor locking down the system by controlling access to the system binaries, configuration data and other system objects.

Host Sensor complements other elements of the Cisco IDS for the smoothest integration of security components offered by any single security provider. And as a key component of the Cisco SAFE security blueprint, IDS represents the most comprehensive and pervasive answers to enterprise threats. For more information on IDS Host Sensor, go to www.cisco.com/go/idshost.

Download Cisco's IDS Solutions Kit at www.nwfusion.com/go/cisco

Extreme set to roll out thin Layer 3 switch

■ BY APRIL JACOBS

SANTA CLARA — Extreme Networks this week will introduce a thin Layer 3 switch

designed to give customers routing and switching capabilities for workgroup applications, plus a new network security feature. In addition to being half the size of Ex-

treme's existing 10/100 Ethernet switch, the 48-port Summit48si runs a new version of ExtremeWare software that adds support for the IEEE 802.1X security protocol, which

lets administrators require a user to log on before using a switch port.

The Summit48si is 1.75-inches high and features dual redundant, hot-swappable power supplies. The switch has two Gigabit Ethernet uplinks and differs from the Summit48i, which also features 48 10/100 Ethernet ports, but has four Gigabit Ethernet uplinks. Extreme says that a small percentage



Extreme's new Summit 48si switch is half the size of its 10/100 Ethernet switch.

of its users required those uplinks — which were there primarily for redundancy — and removing them let it reduce the size of the box by half.

The Summit48si can perform full Layer 3 routing, including multicast, and provide guaranteed quality of service at wire speed. The switch uses the vendor's Inferno processors for hardware acceleration of routing and most other functions.

The Extreme 48si competes with Layer 3 switches from Foundry Networks, Cisco, Nortel, 3Com and Dell. The switch is designed to sit in a wiring closet.

Available now, the 48si starts at \$5,800. ■

Mission Critical Linux slashes staff by 90%

■ BY DENI CONNOR

Linux clustering vendor Mission Critical Linux last week laid off up to 90% of its workforce after attempts to find a buyer failed.

On March 1, the company announced a restructuring that phased out its support and consulting business, leaving only its high-availability clustering products. The layoffs are part of that reorganization. According to Rick Angell, chairman of Mission Critical Linux, the company has secured new funding for its Convolo NetGuard product. It also will continue to develop its Convolo DataGuard Edition, a Network File System failover product.

Mission Critical Linux is not the first Linux company to have troubles.

Lineo, a maker of embedded Linux operating systems, laid off employees last year and junked high-availability and residential gateway hardware it had acquired earlier in the year.

VA Linux Software, formerly VA Linux Systems, reorganized itself out of the hardware business last year and instead is focusing on application software.

Caldera, SuSE, TurboLinux and LinuxCare also have trimmed their staffs to save money. ■

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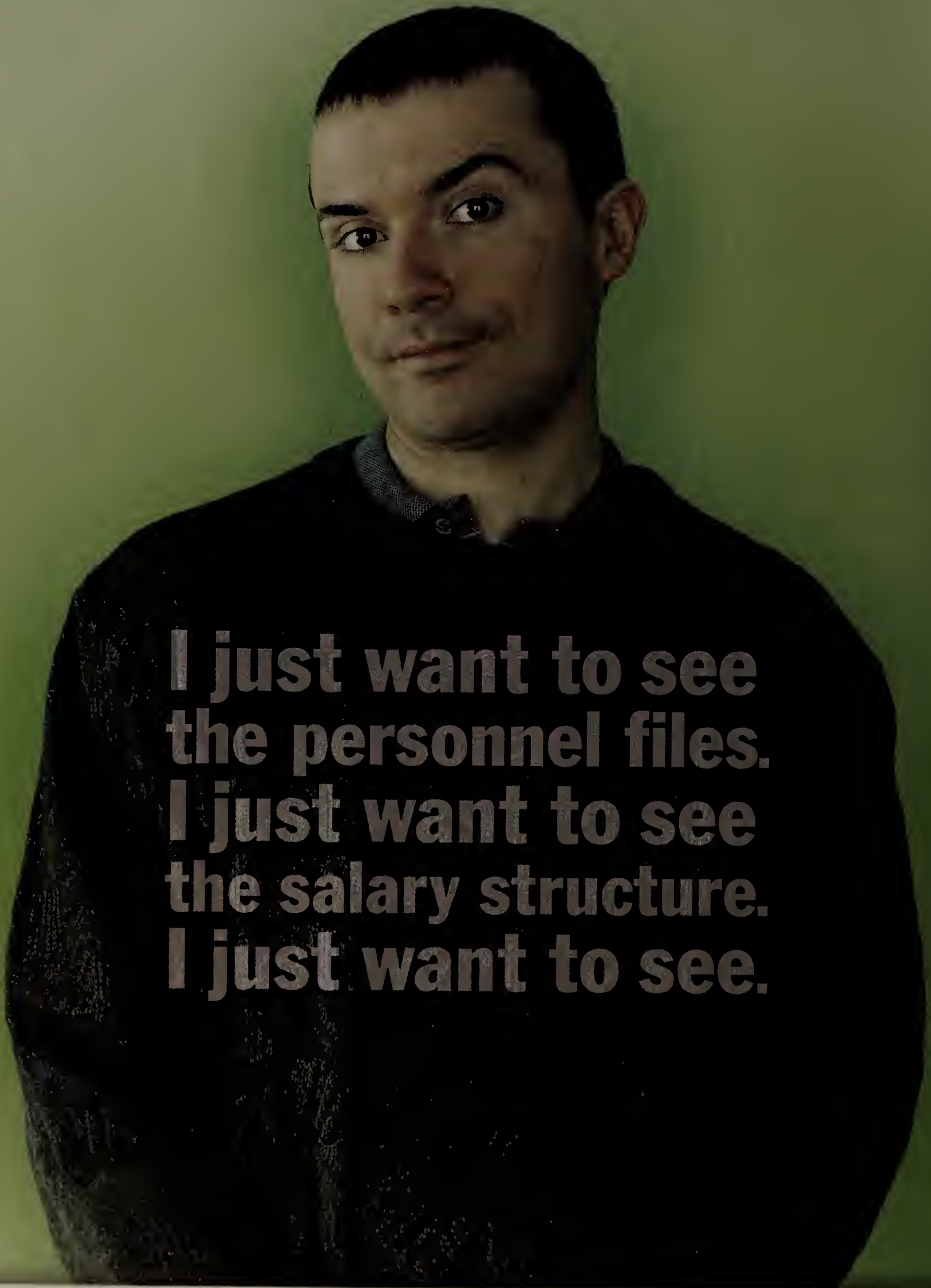


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Spot Takes

■ Storage vendor **Legato Systems**

introduced software last week that simplifies the operation and reporting of enterprise back-up architectures. Called **Networker Operations**, the product provides a single interface to all servers on the network that are involved in back-up operations. It provides secure access to servers, automatic task generation and increased reporting options, thus increasing administrator productivity. Networker Operations lets servers be audited and provides a history of back-up activity, tape library capacity and configuration. Content from reports can be exported to a number of industry standard formats. The software is available immediately starting at \$2,000 for a license, plus \$2,000 per server. www.legato.com

■ **Hewlett-Packard** launched a new network-attached storage (NAS) appliance last week that gives users access to direct-attached storage (DAS) and storage-area network (SAN) arrays. The HP Surestore NAS 8000 Series connects directly to an Ethernet network and provides access to SAN or DAS data for Windows, Linux and Unix clients. Customers can add storage to the NAS 8000 without taking the system down or disrupting client access. The NAS 8000 will be available this month starting at \$36,500. www.hp.com

■ **HP** last week joined forces with a number of scientific bodies around the globe to examine how Linux running on HP's servers can serve as a key platform for research. HP is looking for its Itanium processor-based servers to play a big role in the scientific community, and researchers seem to think HP has something to contribute. The group, formally known as the Legato Federation, is made up of HP, the National Center for Supercomputing Applications, the University of Illinois, the Bioinformatics Institute in Singapore, Groupe ESIEE in France, China's Tsinghua University, Australia's University of New South Wales and the University of Waterloo in Canada.

Revisiting Jumbo Frames

While not a standard, the technology has its place for certain applications.

■ BY PHIL HOCHMUTH

While Jumbo Frames technology remains in standards limbo, those who have used the technology for years continue to extol the virtues of stretching out the standard Ethernet frame size to boost Gigabit Ethernet throughput.

Extending the size of Ethernet frames can increase Gigabit Ethernet throughput by as much as 50% to 300% in large server-to-server database transactions or IP storage applications. And while some are still calling for an official standardization of Jumbo Frames, others say it works fine as a proprietary niche technology and would be impractical for widespread adoption if standardized.

"[Jumbo Frames] is a very useful technology, and it certainly has its place," says David Newman, president of Network Test, a network consulting and equipment testing firm. "If you have boxes in a data center and they're made by the same vendors [with support for Jumbo Frames], I'll design that in any day."

Alteon WebSystems originally developed Jumbo Frames in 1997 for its network interface cards (NIC) and switches. (Nortel acquired the firm in June 2000 and sold it to 3Com in the fall of that year.) The technology involves changing an Ethernet frame's maximum transmission unit (MTU) size from the IEEE standard of

1.5K bytes up to 9K bytes. By increasing the payload of each packet, the amount of packet processing work switches and servers would have to do would decrease while throughput would go up, because more data was being passed with less headers.

Since Alteon first put the technology in its gear, several vendors have adopted their own proprietary versions of Jumbo Frames (see graphic). But for Jumbo Frames to be effective, the equipment used must be from the same NIC and switch vendors. Also, the Jumbo Frame traffic cannot touch nonsupporting gear.

This reality forces users to pick and choose carefully where they run Jumbo Frames, says John Savage, chief systems

engineer at Christopher Newport University in Newport News, Va.

"Right now, you can only use it in segments of your network that are only dedicated to Jumbo Frames. Any machine that doesn't support it won't understand it," he says.

Savage uses Jumbo Frames with Foundry Networks switches and Alteon NICs on four of his network servers. He says the technology has improved the amount of data the database and e-mail servers can process by 50%, but the switches must reside on their own subnet and virtual LAN where Jumbo Frame traffic does not touch other servers or switches.

"It definitely would be a benefit if
See Jumbo Frames, page 24

Enterasys launches branch-office routers

■ BY TIM GREENE

Enterasys Networks is blending several of its technologies into a new family of branch-office routers that claim to cut the cost and simplify management of network gear in remote locations by reducing the number of devices required.

At the Cebit conference this week, Enterasys is announcing two products in a new family called X-pedition Series Routers (XSR) that route locally and also connect to the Internet or service provider network. As an option, the gear can protect the office from Internet attacks. The XSR 1805 and XSR 1850 support IP Security VPNs as well as a firewall, and by the middle of next year will support intrusion detection.

The Wawa convenience store chain, based in Wawa, Pa., plans to use the equipment in more than 550 of its stores to network free-standing servers and to connect sites to a planned frame relay network, says Marty Maglio, Wawa's director of network architecture.

These XSR devices will compete against similar boxes made by Cisco, Lucent and Nortel, and sell for about the same price,



Enterasys' X-Pedition 1805 combines WAN and LAN routing, firewall, VPN and intrusion detection.

says Joel Conover, an analyst for Current Analysis. But the XSR gear claims better throughput than its competitors, he says.

Maglio says he doesn't need the firewall and VPN today, but likes the fact that it's an option. "It's modular so we can add to it without ripping out the whole infrastructure," he says. The gear can be managed with Enterasys' Insight platform, which is the software Maglio uses to manage other Enterasys gear that anchors Wawa's network.

The XSRs use routing code from existing X-pedition LAN gear, VPN software from its Aurean line of VPN gateways, Enterasys' Dragon intrusion-detection software and a stateful firewall it licensed and customized from Elron Software.

See Enterasys, page 24

Big deal

Jumbo Frames, the proprietary technique of speeding Ethernet throughput, has generated a long debate about its usefulness and practicality. Here are a few of the main issues:

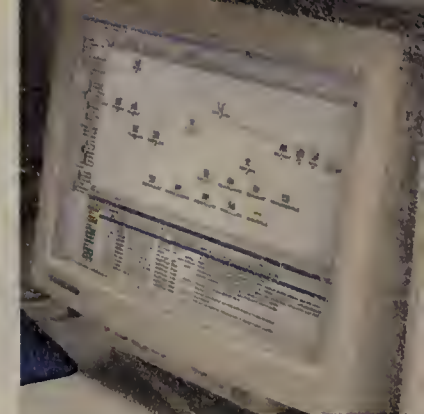
Pros

- Saves processing loads on servers and clients.
- Frame size lets more data be transferred over networks.
- Could help reduce WAN bandwidth needs.

Cons

- Nonstandard technology.
- Interoperability problems.
- Spotty vendor support.

After months of work, you've finally cracked



the consolidation of your three data centers into one, when word comes in that you're buying your largest overseas distributor, adding two more data centers to the already complex equation. Okay, now what?

To stay competitive in an environment like this, you have to be able to react quickly and decisively in the face of sudden change. It would help if your infrastructure were open, resilient and manageable enough to adapt when you need it to. And the only way that's possible is if the infrastructure is built to work around your needs, not the other way around.

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i n v e n t

Pirus switch eases multivendor storage control

■ BY DENI CONNOR

ACTON, MASS. — Start-up Pirus Networks launched a storage switch last week that promises to help businesses consolidate mixed storage devices and servers under a single management interface and speed access to stored data.

The company announced its Storage Utility Switch PSX-1000, which lets block-based storage-area network (SAN), file-based network-attached storage (NAS) and server-attached storage data be managed together.

The PSX-1000 connects to the network and servers via its Ethernet or iSCSI connectors and via Fibre Channel, SCSI or iSCSI to storage devices. Key to and included with the PSX-1000 is a variety of management software — ServFlex File Services, Web- and command-line inter-

face PirusView management software and Secure Virtual Storage Domain provisioning software, which lets groups of storage be securely managed on a domain basis. ServFlex File Services is the technology that allows for the bundling of different storage devices. The PSX-1000 then acts as a traffic cop, controlling access and directing data to its appropriate destination.

It is this ability to mix, match and manage multiple storage types that makes the Pirus box valuable to Worcester Polytechnic University in Massachusetts. "We have 10 Linux servers, each with its own storage providing file, mail and Web data," says Bob Brown, a manager of computing facilities, who manages the storage attached to each of those servers sepa-



Pirus Network's Storage Utility Switch PSX-1000 promises to consolidate mixed storage devices and servers.

ately. "The Pirus switch makes the devices attached to it look like a single, large disk that can be managed as a large pool of storage.

"It makes the storage accessible to any user or server," says Brown, who adds he easily can add on any type of storage independent of the server operating system in the future. "With the

Pirus box, you could add SAN arrays, [Just a Bunch of Disks], quite a number of different configurations. It adds more flexibility and easy reconfigurability."

According to Jamie Gruener, an analyst with The Yankee Group, switches such as the PSX-1000 represent the next generation of storage virtualization and NAS/SAN convergence devices.

"A lot of customers today are looking for ways to better leverage their IP [and Fibre Channel] networks and storage to manage and perform a variety of functions," Gruener says. "[The Pirus switch] has elements of virtualization, SAN/NAS convergence and, longer term, an aggregated platform for IP and Fibre Channel. [With it], you are looking at storage management and virtualization and having a

switching architecture in a single product that makes data access faster and more intelligent."

Vendors such as Maranti Networks, Rhapsody and Invio are working on devices that combine the ability to communicate with IP and Fibre Channel networks. Pirus' switch also competes with virtualization vendors such as DataCore and FalconStor.

The Pirus switch, which holds 12 multiprotocol blades, is fully redundant with hot-swappable and pluggable power supplies and fans, and can be upgraded easily through the addition of extra single-purpose blades as new storage services are needed.

The PSX-1000 is available now starting at \$85,000 for a configuration that can attach four servers. Each PSX-1000 can attach to up to 12 servers.

Pirus: www.pirus.com

Jumbo Frames

continued from page 21

[Jumbo Frames] were approved as a standard," Savage says. "Until a standard is in place, it will be a lot harder to use it."

Other users are fine with using Jumbo Frames in certain network areas with homogeneous gear, such as storage-area networks.

Jumbo Frames is used on storage devices and for moving large blocks of data between servers at Lawrence Livermore National Labs (LLNL), a U.S. Department of Energy research lab located at the University of California, Berkeley.

The school started using Jumbo Frames several years ago when the network staff first implemented Gigabit Ethernet. While large switch-to-switch throughput ran fine, they discovered that the servers could only process a trickle of the available bandwidth, says Dave Wiltzius, network division leader at the lab.

"On any of our machines, such as high-end Intel, or even Alphas, they would tap out at a couple 100M bit/sec," when using standard frame sizes over Gigabit Ethernet. Wiltzius says "By increasing the MTU size, we found that we could get anywhere between two and three times the throughput and cut down on CPU utilization."

While the extra throughput of

Super size

A list of some vendors' products that support 9K-byte Jumbo Frames, or maximum transmission unit sizes larger than the standard Ethernet 1.5K-byte size.

Switch vendors:

Vendor	Product
Cisco	Catalyst 6000 series switches
Nortel	Alteon series switches
Extreme	i series Summit switches
Foundry	Switches with JetCore modules

NIC vendors:

•	3Com
•	Intel
•	Syskonnect
•	Asante
•	NetGear

Jumbo Frames is good, the relief on a server's processor and NIC are key because less processing of packets means more resources are available for the server to do what it's supposed to — run applications and store files — instead of processing network traffic, he adds.

LLNL uses Jumbo Frames technology on its Cisco Catalyst switches and NICs from several vendors on its servers. While the proprietary nature of Jumbo Frames limits Wiltzius to using products from a few vendors end-to-end, he says this is not a problem because Jumbo Frames are only effective for a specific few applications.

"It's not a campuswide technology," Wiltzius says of Jumbo Frames. "It's probably limited to 100 NICs and switch ports total."

Because the lab only uses Jumbo Frames on its high-end machines, Wiltzius says he contains those 100 or so Jumbo Frame-enabled ports in their own Layer 2 network, physically separated from the rest of the university.

The IEEE has mulled changing the standard MTU size for Ethernet for several years, but no formal proposals are being considered to change the standard anytime soon. Opponents of Jumbo Frame standardization say issues with backwards compatibility with Jumbo Frames is the major reason why the idea has been shelved.

Part of what makes Ethernet such a simple-to-use and relatively inexpensive technology, standards makers say, is that it can interoperate easily among

equipment with different speeds, and the small frame size is part of that. Other technologies, such as ATM and SONET, let the sizes of their transmission units vary, but this adds complexity and, as a result, greater cost.

While Network Test's Newman, who is also a *Network World* columnist and Test Alliance member, is not one of those opponents, he says there is a valid argument there.

"Realistically, I can see us sticking to the 1,500 [byte frame size] for the foreseeable future," Newman says. "There is a huge installed base of legacy Ethernet equipment out there" — estimated by some to be around 200 million devices from NICs, to routers and switches. "Are we going to go throw all those away because we want to have new frame size? I don't think so." ■



More online!

Network World columnist Kevin Tolly says the arguments in favor of Jumbo Frames are stronger than ever.

DocFinder: 8446

Enterasys

continued from page 21

The two boxes have dual 10/100 Ethernet ports and can be fitted with T-1 or basic-rate-interface ISDN cards for connecting to the Internet or a service provider.


XSR 1805 is a desktop box with two slots for option cards. It uses a Power PC processor and sports a custom IP Security VPN-accelerator chip on the motherboard.

XSR 1850 is a 19-inch rack-mountable version of the 1805, but unlike the 1805, it has an internal power supply.

Early next year, Enterasys will have a processor card for powering intrusion-detection and firewall software. Other future plans for the equipment call for voice-over-IP support so branch voice and data networks can be merged, and Session Initiation Protocol support to enable Microsoft Messaging. A DSL card is planned by the middle of next year.

The routers enforce quality of service using weighted fair queuing, type-of-service bits, Differentiated Services and weighted random early detection. They also perform policy routing, sending different classes of traffic over different WAN links depending on the treatment they require.

XSR 1805 is available within 90 days for \$1,500. XSR 1850 is available in July for \$3,200. ■



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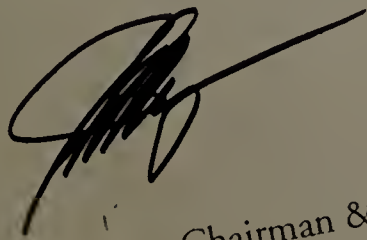
On February 22, 2002, Secure Computing and Network Associates entered into a purchase agreement for Secure to acquire the Gauntlet™ product line.

Network Associates has decided to streamline their product line and focus on their core business. For Gauntlet, their widely used application firewall product, they set out to find a buyer who had experience selling and supporting enterprise security products, and the infrastructure and know-how to properly support Gauntlet's worldwide user base.

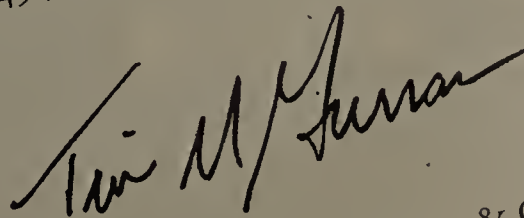
As the leading provider of high-end, ultra-secure, application firewalls to enterprise accounts, Secure Computing was an ideal candidate for Network Associates to approach. Secure Computing has been dedicated to selling and supporting Sidewinder™, the industry's most secure enterprise firewall, for over seven years. As such, Secure Computing already has the complete support infrastructure in place to properly handle this Gauntlet transition.

We at Secure Computing are delighted to have the opportunity to acquire the Gauntlet product along with other Gauntlet-related assets in this transaction. Secure Computing's purchase of Gauntlet will further solidify our position as the industry's leading supplier of enterprise firewalls. Secure Computing is committed to working with firewall and VPN customers. Ultimately, we plan to build upon Gauntlet and Sidewinder technologies to develop the most comprehensive hybrid architecture firewall in the marketplace. Our long-term goal is that all customers reap the benefits of this acquisition with best-of-breed technology solutions.

To find out more about Secure Computing's purchase of Gauntlet or for questions about support or software licensing, please contact (800) 379-4944 or e-mail us at sales@securecomputing.com.



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Hey Bill, stay off the stand

Judge Colleen Kollar-Kotelly is scheduled to start hearing testimony today for remedies in the penalty phase of the Microsoft antitrust trial. Rumors abound that Microsoft Chairman Bill Gates will take the stand to testify.

Don't do it, Bill!

When you taped the deposition used in the original trial, you were in friendly territory — the relaxed surroundings of Redmond. And you still had major problems, coming across as an arrogant little man

who believed no one else could remember the history of the PC, who thought no one would possibly reveal the contents of e-mail sent to and by you.

Even after the poor reviews of your taped testimony, you continued to attempt to rewrite history up through the launch of Windows XP and your recent discovery that Microsoft operating systems might have a security problem.

There are people in the industry who were there before you, Bill — they know the history. Anyone running a Windows desktop during the past three years knows Microsoft's sorry record on security (as *Network World* columnist Mark Gibbs put it last week, someone must "explain to Microsoft why buffer overflows are a bad product feature").

Here's the problem. I don't think you're being nefarious or even disingenuous, Bill. You're just too close to the problem, and you look on Microsoft as your offspring.

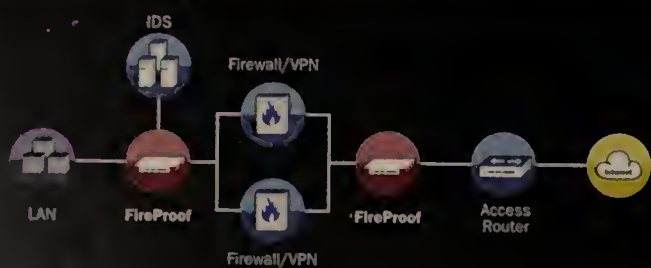
It's never a good idea to put a juvenile delinquent's parents on the stand as a character witness. Not only are they expected to say how wonderful their child is, but anything they say which is even remotely seen as not 100% fervent belief in their child's innocence is immediately leapt upon as a sure sign of the juvenile's guilt.

Microsoft is your baby, Bill. You can't be objective when talking about it. The company has done some bad things. Sure, some of it is attributable to youthful exuberance, some could even be blamed — in part — on the victims of its actions. Best to let the lawyers mumble and stumble through a lot of apologies, minimize the damage to the company and get on with life.

It may be too late, the court may place your baby in a foster home, but don't exacerbate the problem by testifying under oath. It's not what you do best.

Kearns, a former network administrator, is a freelance writer and consultant in Silicon Valley. He can be reached at wired@vquill.com.

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Tip of the Week

I'll be in Salt Lake City next week for **Novell's BrainShare conference** (www.novell.brainshare.com). You can find me with the Technical Support folk on the south end of the lower floor of the Salt Palace — stop by and say hello, or visit on Thursday night during the "Meet the experts" event. Also, don't miss the many technology demos in the One-Net Solutions Lab, put on by Novell and its many partners.



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■ PRODUCTS, SERVICES AND STRATEGIES
FOR TYING TELEWORKERS TO THE ENTERPRISE

Short Takes

■ Nearly one-quarter (24%) of the U.S. workforce teleworked some time during each week last year, according to new research from **Cahners In-Stat Group**. The report, "Entering the Access Era: U.S. Telecommuter Demographics & the Impact of Fragmentation on IT Platforms," expects this number to increase to 28% by 2004, to about 40 million workers. It predicts the total number of teleworkers accessing the Internet will grow about 17% annually in the enterprise market, and 11% in the midsize market, through 2004.

■ The residential broadband access market will be worth \$80 billion by 2007, according to a new report from **ARC Group**, "Broadband Access 2002." The report predicts that by the end of 2007, broadband connections will overtake narrow band, with DSL accounting for one-third of all connections, closely followed by broadband cable. Satellite, fiber and fixed wireless will make up a smaller portion, because of higher cost and limited availability.

■ One-fifth of hiring managers say they let employees telework, according to a recent survey by **The New York Times Job Market**, the newspaper's print and online recruitment service. More than one-third of hiring managers predicted they'll have more teleworkers because of new employees' concerns after Sept. 11. Thirty-six percent of job seekers said they hope to telework at their next job; 31% said they'd consider it. www.nytimes.com

■ **Quantum** recently announced Snap Server 1100, a removable, desktop network-attached storage appliance that lets small-office networks store and share files in mixed Windows, NetWare, Unix, Linux and Macintosh environments. The 40G-byte version costs \$550; the 80G-byte costs \$850. www.snapserver.com

Nortel extends VoIP to teleworkers

New quality-of-service features may draw IP-leery call center businesses.

■ BY TONI KISTNER

Nortel recently unveiled two new voice-over-IP products built specifically for enterprise teleworkers and call center environments. Remote Office 9110 and 9115 extend the features of Nortel's Meridian PBX and Succession IP-PBX systems, and round out the line that includes Nortel's 9150 Branch Office product.

The products work with Nortel Meridian digital phones. The 9110 is a circuit card that snaps onto the bottom of Meridian 2000 phones; the 9115 is a PDA-sized adapter that attaches to Meridian 2000 and 3900 series phones. The phone then plugs into any IP broadband connection — DSL, cable or satellite. The phones let teleworkers use the same functionality they have in the office: conferencing, caller ID, call transfer and dialing plans.

On the network side, Nortel's Reach Line Card is needed. The cards can work with a mix of Remote Office 9110 and 9115 Office and 9150 Branch Office users. One card supports 16 to 20 teleworkers, or up to eight branch offices.

The phones can connect to the system via IP broadband only, analog only, or both, which allows for flexible applications. Because the system isn't dependent on a high-speed connection, firms can roll it out to teleworkers en masse. Those who don't yet have high-speed service use the analog connection until it becomes available.

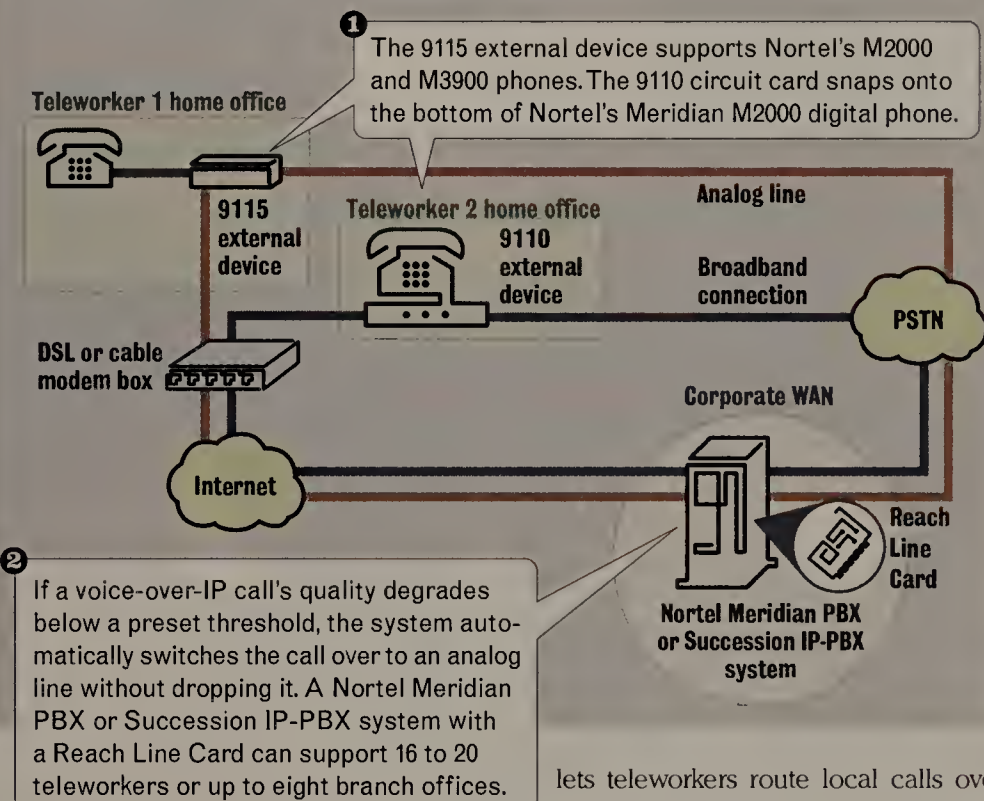
Quality of service is key

More importantly, when using both, the analog connection serves as a backup to the IP connection, providing quality of service (QoS). Specifically, a QoS feature lets users set a threshold between one and 10. If call quality falls below the threshold for a preset period of time, the system automatically dials the analog line, confirms a good connection, then moves over the call. Concurrently, it continues to monitor the IP network, and if that connection is restored it will move the call back to IP.

Other voice-over-IP vendors such as MCK Communications offer similar voice-over-IP products that allow dual connections over analog and IP broadband, but the ability to transition live calls from IP to public switched telephone network to maintain QoS is unique, says Meta Group analyst Elizabeth Ussher.

VoIP enters the home office

Nortel's Remote Office 9110 and 9115 extend voice-over-IP capabilities to corporate teleworkers. A back-up analog line feature ensures quality of service and allows local calling, including 911.



"Good voice quality is the biggest challenge to [voice over IP], especially in the remote environment. If I'm at home on an IP broadband connection, there are no performance guarantees," says Tom Gilhaney, Nortel's product manager for Remote Office products.

Nortel is banking on the QoS feature to be a big hit with call center customers who are considering building a virtual component into their operations. For instance, the product would let a travel agency bring remote agents into its call center queues, whether they're 500 or 1,000 miles away, and across time zones. Of course, they'd need to give serious thought to security, and run the connections over a VPN.

"Quality of service is critical for call centers. If you lose a few packets, you could mess up a credit card number," says Ann Swenson, team leader for Nortel's IP Telephony for Enterprise group.

Other features of the Remote Office 9110 and 9115 consider home-office workers' needs. When a teleworker dials 911, for instance, the call is automatically routed over the analog line so emergency services can locate the office. An optional button

lets teleworkers route local calls over the analog line, rather than routing them to the network and back again. And a call-cloning feature lets a worker's phone simultaneously ring in corporate and home offices, obviating the need to forward calls or give out multiple contact numbers.

The total cost per user will be about \$1,200, including the cost of phones (about \$175). While this is a relatively expensive purchase for network executives supporting casual teleworkers, the one-time expense could be palatable to firms using telework to reduce real estate costs. "The cost of renting an 8-by-10 office space is a lot more," Swenson says. ■



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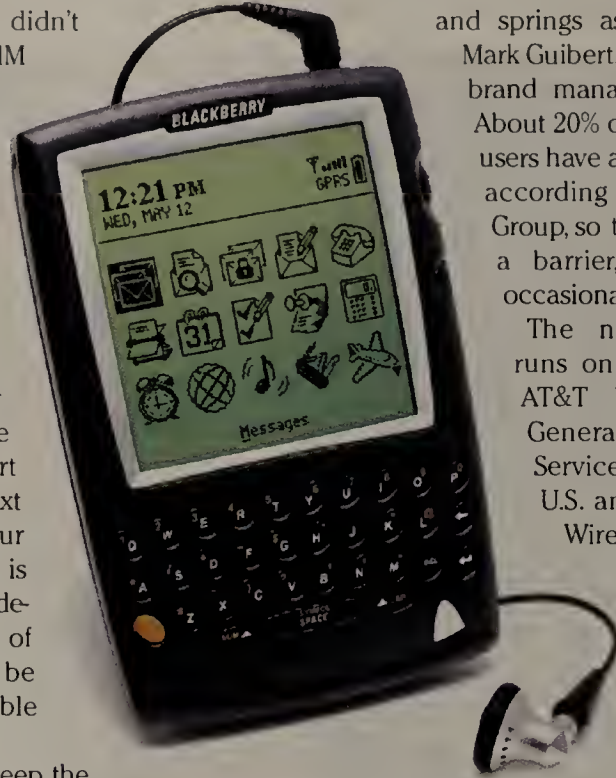
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What's behind RIM's new BlackBerry 5810?

Berry 5810, and it didn't change a thing. RIM simply added a phone jack to the top of the device, into which you plug a headset and mike. You input phone numbers the same as you would any other phone, and make calls or send Short Message Service text messages from your address book. RIM is sending me the device in a couple of weeks, and it will be generally available within a month.

"We wanted to keep the keyboard and large screen, and didn't want to add mechanical components. You want as few mechanical hinges



and springs as possible," says Mark Guibert, vice president of brand management at RIM. About 20% of wireless phone users have adopted headsets according to The Yankee Group, so that shouldn't be a barrier, especially for occasional phone use.

The new BlackBerry runs on VoiceStream or AT&T Wireless GSM/General Packet Radio Service networks in the U.S. and Rogers AT&T Wireless in Canada.

The device will cost \$500, and service pricing isn't yet settled but should fall in the \$40 per month range for

voice and data. It will run on the same BlackBerry server software as earlier

devices, and while RIM doesn't have plans to offer an upgrade path for existing 957 users, it expects companies will buy 5810s for their top executives and hand down the 957s, as they've done with previous models.

While adding voice might be a big deal to remote users like me, RIM isn't positioning the 5810 as a voice device at all, says Yankee Group analyst Sarah Kim. Instead, voice is RIM's entry into the carrier stores, a whole new distribution channel. "It makes more sense for the carriers to sell something that does voice rather than just wireless data," she says.

And in fact, the bigger news behind the voice news is that the 5810's client software is based on Java 2 Platform Micro Edition, which opens up the BlackBerry platform to the large community of Java application developers, and that IBM Global Services will offer 5810 support to its customers.

Kistner is the managing editor of the Net.Worker section of Network World. She can be reached at tkistner@nww.com.

Next-generation home nets could spell IT trouble

■ BY TONI KISTNER

MAYNARD, MASS. — Because today's home network is built around the PC, teleworkers use many of the same applications and hardware as their in-office colleagues. But a new kind of home network is fast emerging — built around the cable TV set-top box — that could cause problems for network executives charged with supporting and securing corporate home offices.

Ucentric Systems, a software application development start-up, is one of a handful of companies working to deliver next-generation set-top boxes that will let cable service companies distribute media across networked TVs, PCs and stereos. Ucentric's client/server application framework delivers the content and a suite of entertainment and communications applications. The company's reference design, which it is licensing to hardware manufacturers, con-

sists of a media server that attaches to the household's main cable TV set-top box. Additional devices each require a media client, which is a small external adapter. These first devices are networked using coaxial cable but only as a way to keep the initial cost low. Ucentric's platform lets vendors build in a variety of network interfaces — wired Ethernet, wireless, home phone line, power line — to transmit the data.

Ucentric's platform will let cable companies offer services based on customer demand, in bundles or à la carte, and have the ability to remotely provision new applications, or offer trial versions.

The company has secured partnerships with big-name cable operators AT&T Broadband, Comcast and Rogers Cable, and has field-tested its service for 14 months. Pilot programs will follow by summer, with wide-scale deployment expected by year-end.

Entertainment applications will surely drive early adoption; in particular, multi-TV personal video recording (PVR), or the ability to record and stream entertainment content on more than one TV. However, Ucentric has developed a range of applications accessible from the TV and PC, which means your teleworkers soon may run additional applications on their work system — or ask permission to do so. Thus far, Ucentric has field-tested instant messaging; Web browsing; caller ID; unified messaging; e-mail; voice mail; shared Internet access; digital jukebox; PVR; and a portal application for viewing news, stocks and weather.

Moreover, the Ucentric media server is in essence a PC home gateway, complete with LAN and WAN ports and some form of firewall, which distributes Internet access to

PCs and TVs. And Ucentric says its partners are looking at building a cable modem into the set-top box.

These developments could cause some sticky situations between you and your teleworkers, and blur the lines between home office and home entertainment. If your teleworkers already have a cable broadband modem and a company-supplied router, will you let them upgrade to this next-generation set-top box/cable operator supplied home gateway? How will you secure it? Will your company pay for basic,

cable modem service but not additional home entertainment services? What will company policy be when teleworkers ask to replace their existing cable setup so their families can enjoy multi-TV PVR?

And on their end, teleworkers will need to be extra vigilant in defining the boundaries of the home office, and setting security and privacy parameters, lest their kids pop into their e-mail accounts or buddy lists, or access their parents' work-related Web sites and Web-based applications from the TV as their parents do on their work PCs. ■

Top picks

Participants in Ucentric's user trial rated their interest in a range of applications. Their responses offer a glimpse into the future of home networks:

- Multi-TV personal video recording is a must-have (70%).
- Very satisfied with the shared broadband capabilities (72%).
- Caller ID on TV/PC, digital jukebox and Web surfing on TV are "very desirable" applications (50%).

IBM to ship powerful notebook line

■ BY ASHLEE VANCE

SAN FRANCISCO — IBM is preparing to launch a line of notebook computers that will be positioned as portable workstations with enough processing muscle to run high-end applications used by engineers and developers, according to information on IBM's Web site.

The ThinkPad A series will be offered with Intel's new Pentium 4 mobile processor at up to 1.7GHz and 256M bytes of double data rate, synchronous dynamic RAM. Users also can choose from various graphic cards including ATI Technologies' high-end Mobility Fire GL 7800 3D and a hard drive with up to 60G bytes of storage.

Engineers have long relied on workstations — typically powerful desktop machines — to run compute-intensive applications for designing machinery and performing scientific research. IBM says that combining Intel's Pentium 4 mobile processor with powerful graphics processing provides a machine capable of running some of these applications.

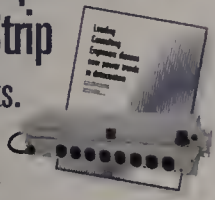
Users will be able to choose between the Bluetooth or 802.11b wireless technologies for the ThinkPad A Series, which will allow mobile workers to access their business applications and work on projects. Also offered is a 15-inch UXGA FlexView display that offers increased brightness and contrast levels.

A high-end configuration with the 1.7GHz Pentium 4 chip and a 60G-byte hard drive costs \$3,700. A lower-end model with the same chip starts at \$3,350. Availability has not yet been announced.

Vance is a correspondent with the IDG News Service's San Francisco bureau.

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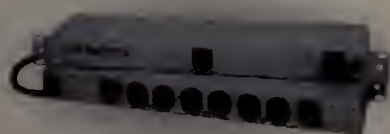
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Macromedia opens 'Net accessibility

■ BY CAROLYN DUFFY MARSAN

Macromedia last week unveiled new versions of its Flash multimedia player and authoring software that work with screen readers, a move that Web site accessibility advocates say is a boon to disabled Internet users.

The software, which will be available March 15, supports Microsoft's Active Accessibility (MSAA), a standard interface for assistive devices such as screen readers to work with Windows-based applications. Developers can use Macromedia's latest software to retrofit Flash content to support screen readers and create new accessible Flash content.

Macromedia's release of Flash Player 6 and FlashMX is good news for public-sector network executives, who are scrambling to meet new rules regarding Web site accessibility.

The federal government's so-called Section 508 rules require agencies and their contractors to ensure that users of assistive devices can navigate their Web sites or face penalties and potential lawsuits.

The U.S. government's new Section 508 rules went into effect last summer, but similar regulations are cropping up in other markets such as Canada and Europe.

Therefore, a growing number of multinational companies are starting to grapple with Web site accessibility.

"Section 508 has effects far beyond the U.S. government," says Bob Regan, accessibility product manager at Macromedia. "We're seeing similar requirements all over the world. The European Union adopted similar rules in December."

Earlier versions of Macromedia's Flash player and authoring tools did not work with assistive devices such as screen readers for the visually impaired. So developers who cared about Web site accessibility had to use regular HTML content instead of multimedia tools like flash.

Now FlashMX has a new panel that makes it easier for developers to provide descriptive text alternatives for graphic elements such as animations created in Flash.

Developers can create a single text equivalent for a Flash animation, and they can make sure the text equivalents are not repetitive for users of screen readers.

The Flash Player 6 lets users of screen readers activate buttons and navigate to places on the Web where they couldn't go before — a major change given that an estimated 25% of Web sites use Flash content, according to Macromedia. Sony Classical, Bose and E*Trade are among the companies that use Flash content on their Web sites.

However, FlashPlayer 6 works with only one screen reader: GW Micro's Window-Eyes. Because of its support for Microsoft's accessibility standard, FlashPlayer 6 doesn't work with the other major screen reader on the market called JAWS for Windows.

"Window-Eyes users will see huge areas of the Web that weren't there before," Regan says.

See Macromedia, page 38

Short Takes

■ **Application Security** announced **AppDetective for Microsoft SQL Server**, a network penetration and analysis tool that locates Microsoft SQL Server databases within the corporate network and identifies vulnerabilities. The tool, which starts at \$1,300, is expected to ship later this month. www.appsecinc.com

■ **Tivoli Systems**, the network management software arm of IBM, last week rolled out the latest version of its threat-management software that the company says now collects data from security devices from the likes of Network Associates, NFR Security and Secure Computing.

Tivoli Risk Manager allows users to pull security information from security products across a network to monitor the data from one location. Risk Manager now supports Network Associates' McAfee Active Virus Defense (AVD) product suite, NFR Network Intrusion Detection systems and Secure Computing's Sidewinder firewall and VPN gateway. Risk Manager, with its server-and-agent software design, monitors security devices in real time and saves the data so users can study it for patterns or trends. Risk Manager also provides "proactive" vulnerability tests, scanning a network for potential security holes. Current Risk Manager users can download the updated software available from Tivoli's Web site. www.tivoli.com

Usage-tracking software on tap from Tally Systems

■ BY JOHN FONTANA

LEBANON, N.H. — Tally Systems this month will add a software usage-tracking feature to its asset-management tools designed to help IT executives discover software they are paying for but not using.

The company is also adding support for automating inventory of software and hardware assets on Unix and Linux systems.

The company's new TS.Census Usage Module, an add-on to TS.Census 2.0 that will ship later this month, can document which corporate applications are being used, by whom and how often. That data can help IT executives identify applica-

tions that are not being used or are rarely used but for which the company is paying a licensing fee.

"We do a lot of recycling of licenses and now we can better track what we have," says Richard Smith, certified software manager for Excel Communications, a marketing firm in Dallas. "We spend \$300 per license for Microsoft Project, so if we can discover the folks who use the program very seldom we can cancel or transfer those licenses," says Smith, who now tracks 3,500 licenses using a spreadsheet and data collected from an earlier version of TS.Census. Now he plans to do all that within TS.Census 2.0.

See Tally, page 38

Laundry list

Tally System's new TS.Census 2.0 features usage tracking, which lets customers locate and track software that may be underutilized and therefore costing the company money.

The TS.Census Usage Module documents installed software by name and version number.

Software Product Usage Catalog

Product Description	Total Runtime (Hours:MM)	Total Active Time (Hours:MM)	Average % Time Active	# of Users Installed
Category Name: Client Software				
Subcategory Name: Internet Tools				
Microsoft Internet Explorer for Win32 Unknown	00:00:00	00:24:03	0.0	3/11
Netscape Communications Netscape Communicator for Win32 4.7	00:00:12	00:00:10	0.7	1/22
RealNetworks RealPlayer 4.0	00:01:21	00:00:00	0.0	1/15
Category Name: Client Software				
Subcategory Name: Mail				
Microsoft Outlook 2000 9.0	10:56:00	00:22:21	60.0	3/4
Category Name: Client Software				
Subcategory Name: Private Logs				
3Com NetVista 3.0	10:20:10	00:00:41	0.0	3/4
Palm Computing NetSync 3.1	25:05:00	00:00:14	0.0	1/4
Palm Computing NetSync Manager 4.0	10:41:24	00:00:00	0.0	1/2


The TS.Census Usage Module measures the usage time of each application, which provides a snapshot of which enterprise software is underused.



More online!

Section 508, the federal government initiative aimed at making Web sites accessible to people with disabilities, is explained in our recent special focus story.

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www.microsoft.com/windowsxp/itpro

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NetQoS tracks performance

SuperAgent 2.0 appliance gets better enterprise-class support.

■ BY DENISE DUBIE

AUSTIN, TEXAS — NetQoS last week bulked up its management appliance to help large-business users more easily pinpoint the source of application performance problems.

Key to NetQoS's SuperAgent 2.0, which sits in front of a switch and passively collects network, server and application response time data, is the ability to aggregate data from multiple superagents and let users view that data via a Web interface.

In the past users had to cull that information from individual SuperAgent hardware devices and correlate it to gain a big-picture look at their environment. Now users can log on to any workstation and access customized reports about the response times delivered of their networks' Web servers, application servers and even external ISP networks.

NetQoS made all data from its existing devices accessible via a Web browser. Also new is external data integration that lets users output data via XML.

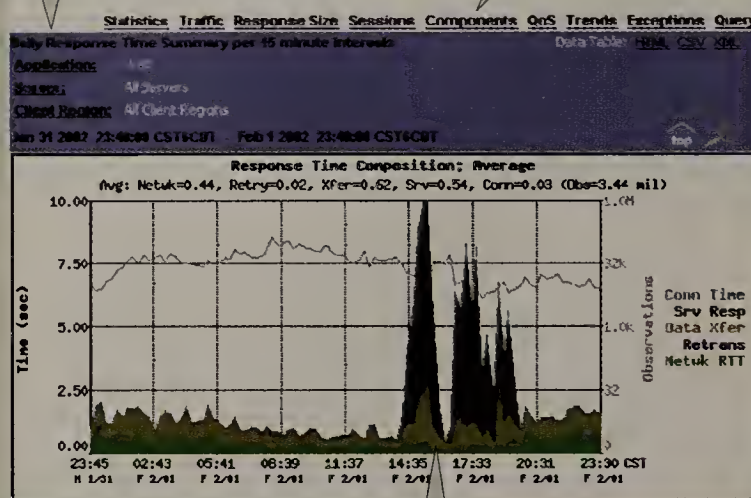
"SuperAgent will monitor traffic

SuperAgent saves the day

NetQoS' SuperAgent shows users how their networks perform under pressure.

Users choose the frequency at which SuperAgent will collect response-time data on the network, servers and applications.

Customers can monitor a range of performance metrics from one Web-based screen.



Color codes let users know that, in this instance, server response times have failed.

in your network, but the nice thing is it will also tell you about the traffic coming into your network," says Peter Jarvis, IT director

at NC Soft, an Austin, Texas, subsidiary of a Korean online gaming company.

Jarvis says SuperAgent lets him

tell any of the 5,000 unique game subscribers per day if performance problems lie within the user's internal networks or an external ISP.

"In the network, everyone likes to point fingers, and the nice thing is NetQoS lets you accurately notify the proper people and get problems resolved quickly," Jarvis says.

Jarvis got those results by trying a new feature of SuperAgent 2.0 that lets users define internal and external IP addresses for SuperAgent to monitor.

Other new features include the capability to let users define thresholds specific to their networks. NetQoS added quality-of-service reports that give feedback based on rate per user, number of users and data loss rate.

Also new to SuperAgent is the option to set up and install a network of performance-analysis devices.

While users always had the choice to install more than one SuperAgent box, Version 2.0 lets users deploy multiple boxes and view the data collected by each box in one central location. With the multiunit SuperAgent deployment, users install smaller boxes, or data collectors, around their network.

Those boxes would feed back into a central management console that can be accessed by the same Web interface as the stand-alone unit.

SuperAgent competes with similar hardware performance management devices from companies such as Niksun and Adlex. And NetQoS boasts customers such as Chevron Texaco and Marriott Host.

Available now, SuperAgent 2.0 costs \$28,500. Purchasing SuperAgent in a multiunit configuration consists of a management console and distributed data collectors. Pricing for the management console starts at \$45,000, with data collectors costing \$9,500.

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Macromedia

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The Macromedia offerings are significant despite this limitation, says Andrew Kirkpatrick, a Web accessibility specialist with the National Center for Accessible Media.

"It's a very positive step in the right direction," Kirkpatrick says. "In a perfect world, a solution would come up that works with all the screen readers and is easy for developers. But unfortunately, we're not in that world."

Kirkpatrick has been testing the new Flash tools for the past few months and says they represent "an exciting change from the past. Before, if you had a Flash presentation on a page, nothing could read it. Now someone with a screen reader... can access that content."

Macromedia may have a leg up on other multimedia companies with the new accessibility features of Flash. Apple's QuickTime software and RealNetwork's RealPlayer let developers

add accessible captions to multimedia presentations, but they don't allow users to navigate into the presentations as Flash does.

"All multimedia players have problems with accessibility on the Web," Kirkpatrick says. "It would be great if we could get all the other multimedia players to expose information to screen readers like Flash does."

Indeed, Macromedia may open a new market for flash. Government Web masters "haven't thought about using Flash because of accessibility concerns," Regan says.

In addition to improvements in accessibility, Flash Player 6 features native video and the ability to load MP3 and JPEG files.

The FlashMX authoring tool boasts a new scripting language based on Java, faster XML data transfers and support for the Unicode standard used in multilingual applications.

Flash Player 6 is a free download, while FlashMX sells for \$500.

Macromedia: www.macromedia.com

Access in a Flash

Here are a few Web sites that offer advice for creating accessible Flash content:

World Wide Web Consortium's guidelines for Web accessibility:
<http://www.w3c.org/WAI/>

Accessibility templates from Macromedia:
<http://www.macromedia.com/macromedia/accessibility/tools/vpat>

The National Center for Accessible Media's examples of accessible multimedia content:
<http://ncam.wgbh.org/richmedia>

Tally

continued from page 35

Experts say usage-tracking software is an improvement over only creating an inventory to match licenses and software.

"An inventory system can tell you what software you have installed, not what is in use," says Patricia Adams, an analyst with Gartner. "When you can track what is actually used, you can use that data to go back and renegotiate licensing deals."

Adams says companies that deploy usage-tracking software initially can save 2% to 5% in licensing costs after discovering just what isn't being used. "Also, when you review maintenance fees you may find you are paying to maintain software that you no longer use."

To that end, Tally also has added a mechanism to track software license purchases, which can be compared against installed software to ensure license compliance.

Tally's usage-tracking software competes with offerings from Tangram Enterprise Solutions and Cognet.

In the era of tight IT budgets, licensing is a major issue, especially for those companies that rely heavily on Microsoft software. In July, the software giant is expected to institute a program called Software Assurance, which could dramatically increase the cost of software licensing for many corporations.

In addition to usage tracking, Tally is adding support for inventory collection on Unix and Linux machines.

The inventory system can collect the manufacturer, product, model and version of installed operating systems and other software.

The system also inventories hardware including manufacturer, product, serial number, workstation machine name, IP address, CPU details, total memory and installed components, such as CD-ROM, LAN adapters, monitors, serial ports, sound cards and video adapters.

TS.Census 2.0 also features integration with Crystal Reports for creating custom reports that can be stored within the Tally software.

TS.Census is scheduled to ship March 25. It costs \$21 per seat for 1,000 users.

The TS.Census Usage Module costs \$4.20 per user.

Tally: www.tallysystems.com

Advantage: Foundry Networks

*Technology that answers the call
for efficient network control*

Just about everyone acknowledges that high-performance switching and routing is a mission-critical function for companies seeking to deploy cost-effective, high-speed metro services. But shifting network traffic patterns and the continuing growth of network traffic have overloaded traditional routers. Thus the cry has gone up for next-generation devices to reconcile performance and capacity problems.

Business users are demanding streamlined access methods that enable quick provisioning of services and bandwidth. Meanwhile, service providers want to better control and manage their networks without expensive overhauls of the existing infrastructure.

With Multi-Protocol Label Switching (MPLS), Foundry Networks' NetIron Metro Routers and Foundry's metro strategy have answered the call for intelligent, efficient high-speed switching and routing. Available now from Foundry (www.foundrynetworks.com), these solutions are designed to protect the heavy

investments already made in SONET and complement new Gigabit Ethernet build-outs while giving service providers opportunities to grow revenues incrementally with minimal additional investments.

"I think of Foundry's NetIron box as a router that I can't seem to slow down," says Jim Koda, systems manager at the University of Southern

California's Information Systems Institute. "It actually passes packets just as fast as our Layer 2 Fast Ethernet switches. It's just like a Layer 2 switch, but it handles IP routing. How much more can you ask for?"

The latest NetIron Metro Router solutions offer new performance and MAC address scalability features, including 4x10 GE metro trunks for bandwidth scalability up to 40 Gbps, as well as support for up to 2 million MAC addresses.

In addition to MPLS, NetIron provides advanced Layer 2 high-availability features including Metro Ring Protocol (MRP) for sub-second failover in metro rings and Virtual Switch Redundancy Protocol (VSRP) for sub-second failover in mesh topologies.

The MPLS Advantage

With MPLS technology, Foundry offers service providers the intelligence and control mechanisms they want and get from MPLS. In addition, Foundry customers get the wire-speed performance of switching, which provides customers a foundation to build out IP infrastructures to support current and future applications and QoS capabilities.

That is because MPLS itself combines the top-shelf features of high-speed switching with intelligent routing. MPLS also uses labels to simplify packet forwarding while adding a level of control without impeding performance. Foundry supports a broad MPLS feature set that includes:

- IP-enabled MPLS core and edge router functionality
- Traffic engineering using OPSF and IS-IS extensions
- The only wire-speed traffic engineering and draft-martini services using Foundry Gigabit Ethernet and SONET/SDH interfaces based on Network Processor Architecture (NPA)
- Extended support for QoS, with ability to provide differentiated bandwidth services for multiple customer service classes

In addition, Foundry is the first company to offer service providers MPLS-based multipoint-to-multipoint Virtual Private Network (VPN) services with Virtual Private LAN Service (VPLS). This flexible offering is ideal for service providers who want to offer Transparent LAN Service (TLS), given that many enterprises today want to connect two or more branch offices over the metro backbone.

Foundry's MPLS VPN services also accommodate different kinds of customer interfaces, including legacy interfaces, while simplifying service provider network operations.

A Comprehensive Metro Strategy

Foundry's overall metro strategy is designed from the ground up to give service providers the networking foundation they want to enable the introduction of new revenue-generating applications, but in a way that doesn't disrupt ongoing operations.

Thus, Foundry focuses its NetIron routers on the metro markets to offer service providers an advanced Layer 2 metro solution, with or without a complete MPLS metro solution. Foundry's MetroLink interface family offers Ethernet and SONET interfaces with consistent features, management, and price/performance regardless of the underlying architecture.

Meanwhile Foundry's metro strategy embraces SONET and Ethernet equally, using Ethernet over SONET for smooth interoperability while offering disruptive pricing, particularly for SONET. And Foundry's use of 10 GE Metro trunks enable service providers to save investment on expensive DWDM gear.

"Foundry's NetIron Metro routers enable us to build high-speed Gigabit Ethernet services cost-effectively," says Bob MacCallum, chief technology officer at Stream Intelligent Networks Corp. "Foundry allows us to transport native Ethernet frames across our SONET and ATM network infrastructure, protecting our existing investments and expanding our service offering."



Foundry's NetIron routers provide answers to the most challenging performance and capacity issues.

'NET
INSIDERScott
Bradner

Larry and the Supremes

I am not a person who thinks copyrights are evil, but I also don't think they should last forever.

The "copyright industries" — as Jack Valenti, president of the Motion Picture Association of America, quaintly

describes the multibillion-dollar conglomerates that control most intellectual property — agree. But they would be quite happy with forever minus one day. Maybe, just maybe, the U.S. Supreme Court is about to say that this would be a

bit excessive.

On Feb. 19, the Supreme Court announced that it would hear the appeal of Eric Eldred, who runs a small organization dedicated to putting public domain literature online (www.eldritchpress.org), against the Sonny Bono Copyright Term Extension Act. Very few observers expected the Supreme Court to accept the appeal because there were no conflicting opinions in the lower courts — a common reason to accept appeals — and because the Supreme Court generally does not go out of its way to plow new ground. At least four of the justices had to have felt that there was an issue of substance to be decided, so there is a hope that they will overturn at least part of the Bono Act. More information about the case can be found at www.nwfusion.com, DocFinder: 8437.

The concept of copyright protection is in the U.S. Constitution: The creator of a work should be given exclusive control over most uses of his creation "for a limited period" so that the person can directly benefit from its creation and will be encouraged to produce other things. The "limited period" in the original copyright law was 14 years, with the ability to get another 14 years if the author is still alive. The period has been extended 11 times in the last century and, before the Bono Act, was life of the author plus 50 years, or 75 years for "corporate authors" such as this publication.

The Bono Act extended both of these by 20 years and applied to existing works. The specific appeal that the Supreme Court accepted is on applying the extension to existing works. It's hard to see what additional inducement to create would come out of an additional 20 years of copyright protection when you already had 50 or more years.

Why is this important to us Internet geeks? The Internet has become the reference tool. Any time that more material can be added to such a tool we all benefit. If endless extensions to the "limited period" mean that nothing more goes into the public domain, then almost all published material will be lost effectively forever. As a data point, only 1.7% of the books published in 1930 are still in print.

I hope the court goes further than just ruling the extension for existing materials is unconstitutional, as Larry Lessig, the lead lawyer for the plaintiff is asking. I hope it also will define the term "limited" to be something closer to what the framers of the Constitution would have thought to be reasonable.

Disclaimer: I'm joining lots of Harvard people who have expressed opinions on this case but, as far as I know, the university itself has not.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

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MIDDLEWARE: Bridging the gap between legacy and new applications.

The ties that bind enterprise applications

■ BY ANN BEDNARZ

After selecting Siebel Systems' customer relationship management suite, service provider Infonet set out to determine which of its other business applications should be integrated with the new CRM software. That's when things got complicated.

Mapping applications and transactions revealed a maze of interconnected programs. Jim deMin likens the process to peeling back layers of an onion, only to expose — tearfully — more layers underneath. "We thought the primary system interfaced with four other systems. We ultimately realized it interfaced with 27," says deMin, CRM program manager at the network service provider in El Segundo, Calif.

To tie it all together, Infonet looked to enterprise application integration (EAI) middleware. Instead of individually connecting each application to every other application, EAI middleware lets customers write a single interface between each application and the middleware, which then acts as a message broker among applications. EAI middleware vendors include webMethods, Tibco, Vitria, SeeBeyond Technology and Data Junction. Traditionally, EAI vendors have offered proprietary integration software, though increasingly they are adding standard XML and Web services-based functions to stay competitive with start-up service providers, such as Grand Central Communications and Flamenco Networks, that offer application integration through their Web services networks.

As a project, EAI is often underestimated, but it's key to the success of today's enterprise CRM rollouts, experts say. Hooks to customer, product and fulfillment information contained in back-end systems are what fill out an enterprisewide CRM strategy. Integration often comes after the fact for companies that first collect best-of-breed applications and then set out to link them together. But as businesses look to get more out of their existing applications, interest in EAI is growing. Meridian Research predicts the market for EAI technologies will hit \$12.5 billion by 2006.

Eliminating points

Before its Siebel purchase, Infonet hand-coded links between applications to facilitate data sharing — but such point-to-point integration is messy and time-consuming. It also doesn't scale well. Using integration middleware from SeeBeyond, Infonet has cut its integration labor from 50% to 15% of the cost of a new software rollout, deMin says. "Middleware has drastically changed how we do business," he says.

Similarly, Oncology Therapeutics Network (OTN) in San Francisco, is in the process of replacing 52 point-to-point interfaces with integration middleware from Tibco.

OTN provides oncology medical practices with products and services including distribution of cancer drugs. The company deals with dozens of pharmaceutical part-

Application considerations

Going into an application integration project? Keep these facts in mind:

Traffic. Application integration increases transaction traffic, which can tax the processing capability of middleware. A business process initiated by an end user can trigger as many as 250 transactions across multiple applications, says Jim deMin, CRM program manager at Infonet.

Test. Middleware can be used to test an application's processing capability. Plus, using middleware to copy transactions between existing and replacement applications allows a company to phase out the old application.

Time. Integration is an ongoing effort. To prioritize projects, Oncology Therapeutics Network looks at what's essential to support its customers and process orders, says Sue Dubman, CIO. Interfaces to content providers are a lower priority than tasks that are specifically involved with operating the business, such as purchasing and order fulfillment, she says.

Synchronicity. Coordination and synchronization of data are simple concepts, but tremendously difficult to execute — not to mention temporary, as business processes change, says Greg Grosh, vice president of strategy and marketing at Data Junction. "Be thankful for the integration you have today, because it's going to break," Grosh says.

References. Customer references are key. Ask references about specific kinds of transactions they are doing and data fields they are connecting, says Jay Gardner, CIO of BMC Software.

ners, biotech companies and content providers — which is one reason it made the move to EAI middleware.

"In addition to selling drugs and supplies, we also provide information services.... That implies you're going to have lots and lots of interfaces, lots of integration requirements," says Sue Dubman, CIO.

For OTN, the Tibco middleware will tie together CRM and e-commerce software from Blue Martini with newly upgraded financial and order management software from Oracle. After linking its internal systems, OTN will begin work to tie partners' applications to its own through the Tibco middleware.

By replacing dozens of point-to-point interfaces with the middleware, OTN will achieve more real-time data exchange, says Sheeny Grellal, director of OTN's CRM program. The Tibco middleware also can operate in a persistent delivery mode for guaranteed message delivery.

Many application vendors offer prepackaged integrators to common software programs; however, out-of-the-box Blue Martini-to-Tibco adapters don't exist commercially. So the OTN team wrote their own, and they did it in just 14 days. "It was relatively easy to convert from Blue Martini data structures to Tibco Rendezvous data structures," Grellal says. "Using Tibco's data-mapping feature, we were able to talk to Oracle, real time, with guaranteed delivery."

Extra assistance

DMC Stratex Networks, of San

Jose, took a different tact. Rather than write all the middleware interfaces on its own, the company supplemented its own development staff with CRM integration services from Sierra Atlantic.

Until 1999, DMC Stratex was a Computer Associates shop. Integration wasn't much of an issue until a pair of acquisitions introduced software from Oracle and an obscure U.K. company called Chameleon Software to the mix, says Lee Jones, CIO at the manufacturer of broadband and wireless access gear.

DMC Stratex made the decision to standardize on Oracle's back-office applications and later added software from Clarify for customer service, Agile for product content management and Siebel for product configuration and salesforce automation.

"I literally have best of breed everything," Jones says. Tying it all together is Vitria's BusinessWare platform for enterprise application integration.

Although Vitria had the tools the company needed to link its applications, time was short. "We found the big challenge was getting up to speed quickly with Vitria," Jones says. So DMC Stratex hired Sierra Atlantic to develop specialized interfaces for the legacy systems — which Sierra Atlantic now sells as prepackaged inte-

gration software — while Jones and his team concentrated on converting the old systems.

Today, DMC Stratex develops most of its Vitria application interfaces internally and relies on Sierra Atlantic for complex projects or when time is short.

Internal application support staff at DMC Stratex are responsible for a particular application plus its Vitria interface.

"Since we are best of breed and there is a lot of information interchange between the applications, it's really good to have someone who is familiar with the technical aspects of that application also be familiar if we have a problem with the interface," Jones says.

Outside the firewall

Putnam Lovell Securities in San Francisco is taking a different approach to integration. Rather than using traditional middleware deployed locally, Putnam Lovell is using a Web-based service for application integration, in keeping with the company's services bent, says CTO Rodric O'Connor.

The financial services company uses Grand Central Communications' hosted service to link its hosted CRM application, Salesforce.com, with BlueMatrix, a software service for creating and managing the distribution of investment research materials.

Before Grand Central, extracting the list of interested and eligible clients from the CRM application and setting up a recipient list for BlueMatrix to distribute new research material, was a manual process. Now distribution occurs automatically. "Grand Central is the integration hub between the two products," O'Connor says. "All three are on the outside of our firewall." ■

“I literally have best of breed of everything.”

Lee Jones

CIO, Chameleon Software



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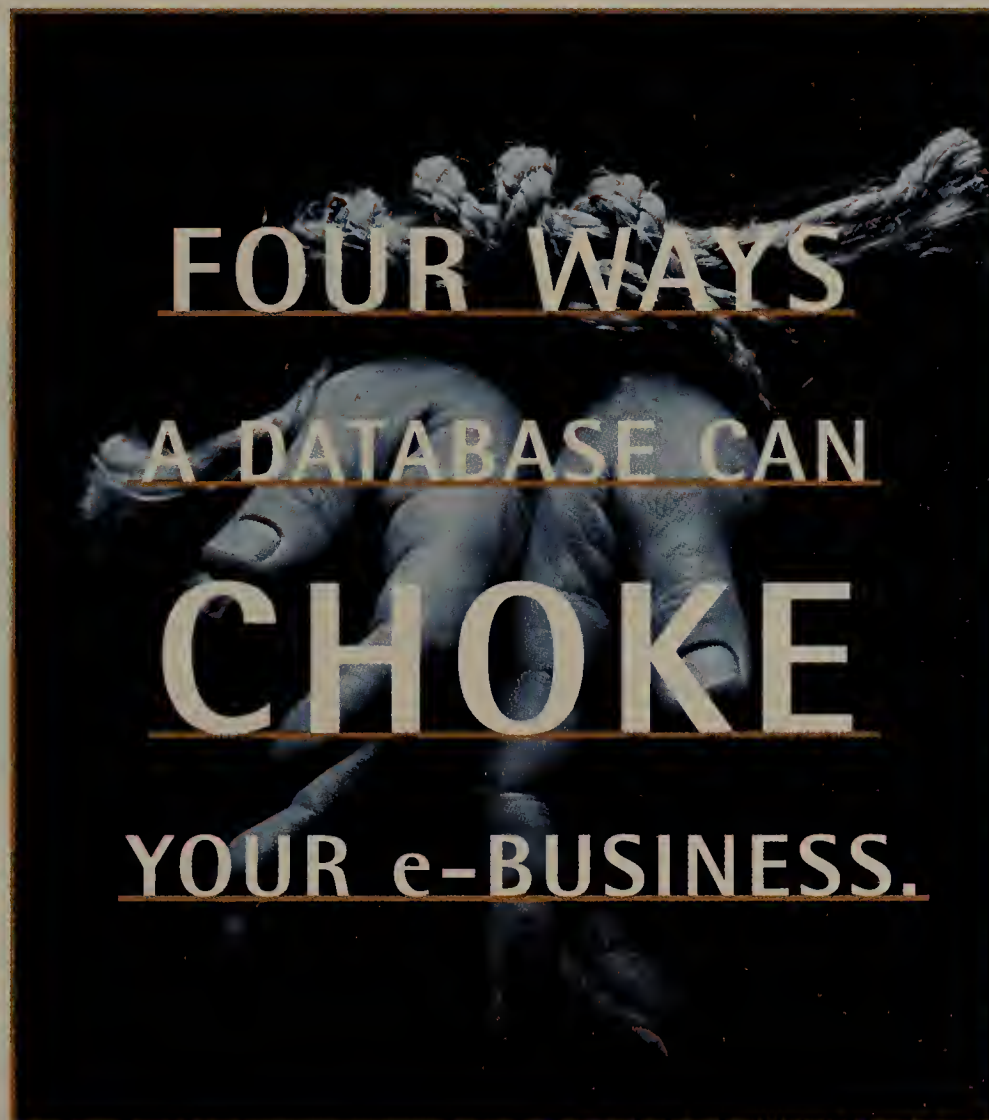
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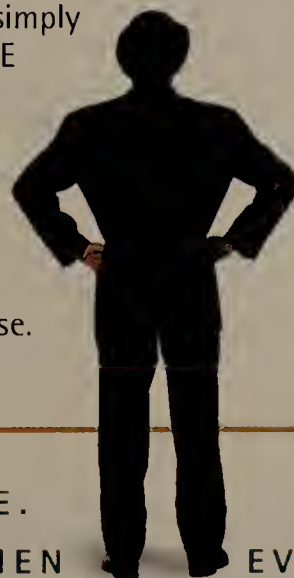
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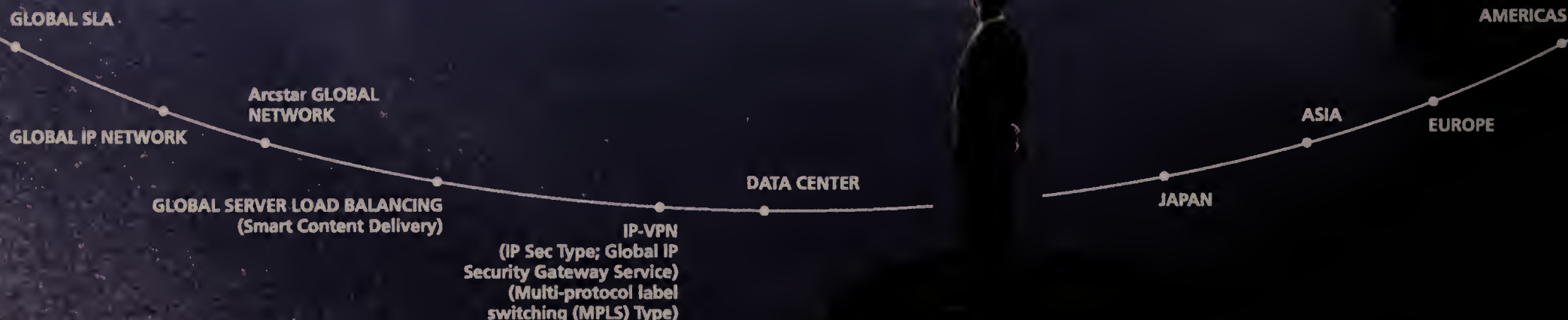
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Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS

Hope emerges from telecom fire sales

But payoff is far from guaranteed for asset buyers.

■ BY MICHAEL MARTIN

Aerie Networks may have been disappointed last summer when a bankruptcy court rejected its \$20 million bid for Metricom's pioneering Ricochet wireless network, but that disappointment proved temporary: Two months later Aerie snapped up those same assets for \$8.25 million.

How did Aerie pull off such an apparent steal? For the most part, no other companies were seriously interested in the assets

of Metricom, a company once worth more than \$1 billion. Only four other companies had proffered bids since Metricom declared bankruptcy last July. Surprisingly, Aerie's \$8.25 million offer was the most attractive.

Aerie was founded in 1999 to build a nationwide fiber-optic network, but a bargain's a bargain. The company now plans to breathe new life into Ricochet while shelving its fiber-optic network plans.

"Other people didn't have the balance sheet to look at Metricom at that point in time," says Emilie Kelly, a senior vice president with Aerie. "But we had the money we'd raised for our national network in the bank, so we were in a good position."

As this case shows, for every loser in the service provider market over the past couple of years, there may be one or more winners. Companies are swooping in to buy substantial network assets for pennies on the dollar from companies that built networks — and debt — as quickly as possible to satisfy investors, and got stuck when their funding ran out.

The question remains, though, whether those old assets are even worth the reduced prices that companies are paying for them. And what new companies and ser-

The bargain bin

Here are some deals companies have found during the telecom slump:

March 2001

AT&T buys NorthPoint

- Deal includes DSL switches and collocation facilities.
- Cost: **\$135 million**
- NorthPoint's assets at the end of March 2001: **\$466 million**, including \$212 million in equipment.

November 2001

Aerie buys Ricochet

- Deal includes service provider and end-user equipment.
- Cost: **\$8.25 million**
- Metricom's assets at the end of July 2001: **\$914 million**, including \$247 million in network equipment.

September 2001

WorldCom buys Rhythms

- Deal includes Rhythms DSL equipment, facilities and customers.
- Cost: **\$31 million**
- Rhythms' assets at end of August 2001: **\$640 million**, including \$256 million in equipment, furniture and fixtures.

December 2001

IDT buys Winstar

- Deal includes customers, facilities and wireless equipment.
- Cost: **\$42.5 million**
- Value of Winstar assets up to Sept. 30, 2000: **\$4.5 billion**, including \$2.7 billion in property and equipment.

vices will result from these cut-rate deals?

Recent history is full of examples of bankrupt companies giving up assets for a song, and pretty much everything is up for grabs. Sometimes entire operations, includ-

ing staff, equipment and central office space, are scooped up. Other times, a buyer may be after just network switches.

Early last year, AT&T paid \$135 million to pick over the carcass of DSL provider NorthPoint Communications (see graphic, above). The deal included NorthPoint's DSL access multiplexers and collocation space. Later in the year, WorldCom picked up the remains of DSL provider Rhythms NetConnections — including DSL access multiplexers, collocation spaces and customers — for only \$31 million.

The wireless arena also has been the scene of seemingly outrageous deals. Late last year, IDT, a facilities-based, multinational carrier, purchased the assets of wireless provider Winstar Communications for \$42.5 million. Those assets included spectrum licenses, wireless transmission equipment, switches and customers. It was not a bad price for a company with \$5 billion in assets and about \$200 million in revenue.

In January, Global Crossing declared bankruptcy. The provider's fate has not been determined. Some groups have made bids on the entire company, while carriers such as AT&T have been rumored to be interested in picking up particular assets.

And then, there's Aerie, which picked up wireless radios and intellectual property rights from Metricom for pennies on the dollar. Aerie executives say they can suc-

See Hope, page 42

Short Takes

■ **Genuity** last week launched its **Black Rocket Remote Data Replication** service, which offers users data-mirroring support over the company's IP network. Genuity is teaming with **EMC** to let customers mirror data they store on EMC Enterprise Storage System devices. The service hosts data on a second EMC device at Genuity's data center. Black Rocket Remote Data Replication service costs about \$60 to \$70 per month per terabyte of storage space. The price varies depending on how much storage space and Internet connectivity each user requires. www.genuity.com

■ About a year after launching its **InfraCare** program to focus on around-the-clock IT management services, **Amdahl** is being combined with **Fujitsu Technology Solutions** to provide end-to-end support for corporations. Fujitsu last week announced it is combining its open systems server and storage expertise with Amdahl's global IT management and support capabilities. The company will retain the Fujitsu Technology Solutions name. The companies say the goal is to help customers maintain stability and mitigate risk as they adapt to changing IT demands. Fujitsu Technology Solutions will compete with vendors such as IBM and Electronic Data Systems.

Sprint making strides in Web hosting market

■ BY JENNIFER MEARS

While the Web hosting market suffered last year with market leader Exodus Communications filing for bankruptcy and others closing data centers, Sprint was busy planting its flag on that turbulent landscape.

However, establishing itself as a force in the hosting market won't be easy for the

telecom company that's better known for its PCS wireless services and fiber-optic IP network. Sprint first must focus on shrugging off its label as a Johnny-come-lately to the hosting game.

Sprint "is facing an uphill climb," says Carrie Lewis, an analyst with The Yankee Group.

Sprint had only two data centers when it launched its E-Solutions Web hosting and managed services division in November 2000. Since then, Sprint has rolled out a suite of managed services that lets it manage everything from the network to the application and opened eight data centers, making it one of the only hosting companies to open rather than close facilities in 2001.

See Sprint, page 48



More online!

More hosting news from Cable & Wireless, Verio and Electronic Data Systems.

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EYE ON THE CARRIERS

Johna Till Johnson



Boosting your IM IQ will pay off

at work. It represents a new communication paradigm with profound implications for companies and service providers.

An informal survey of financial services firms revealed that most have used instant messaging — and supported it within their IT departments — for more than a year. They view it as a strategic technology enabling faster response time to clients and improving communication within departments.

More importantly, enterprise-ready instant-message suites are getting ready for widespread deployment. FaceTime, which presented at a recent Wall Street Technology Association seminar, makes enterprise instant-message products that helped one customer improve the efficiency of the second-level help desk at its call centers by up to sevenfold. Any technology that delivers that kind of return on investment should pique your interest.

But that's not the whole story. Most of the instant-message services are gearing up to

offer "click to chat" functionality, meaning that once you've found your buddy, you can switch from online to voice communications. The "call" goes directly to the PC, across the instant-message session, never touching the desktop phone. Add to that the concept that handheld device manufacturers such as Palm are seeking to add instant-message capability to their next-generation devices and you have a new approach to voice communications.

Instant messaging could well be the killer app for enterprise IP telephony. . . and sound the death knell for expensive, intelligent network-routing services. Instant-message technology embodies the two key capabilities necessary for next-generation communications: highly scalable directories and an effective call-setup mechanism. (Those who sniff at instant messaging's scalability might want to consider that there are more than 100 million users of instant messaging in the world, which makes it larger than any wireless phone

network by far.)

You might think the prospect of such a disruptive technology would worry service providers, because it strikes at the heart of their core revenue streams. But when I discussed the idea with a couple of major service providers, their reaction was to say, in essence, "Uh, what's she getting at?"

As I said before, plenty. Service providers should think hard about how to incorporate this disruptive technology into their offerings, or risk being on the wrong side of this revolution. Enterprise IT directors should consider ways in which instant messaging can improve efficiency in areas such as call centers, help desks and for internal functions such as personnel and accounting.

Johnson is senior vice president and CTO for Greenwich Technology Partners, a network consulting and engineering firm. She can be reached at johna@greenwichtech.com.

Hope

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ceed where Metricom couldn't because the economics have changed.

Aerie intends to charge users a price comparable to broadband services such as DSL and cable — about \$40 and \$50 per month. Metricom charged about twice as much for Ricochet.

"Obviously the cost of the infrastructure was a lot less for us," Aerie's Kelly says. "And we'll be getting better lease agreements for the poles we use to install our radios. Metricom paid too much."

Appearances can be deceiving

What initially might appear to be a bargain may not be one in the long run.

There are several reasons why assets of bankrupt service providers are not selling for anything close to book value, says Dave Schaeffer, CEO of ISP Cogent Communications, which in February made a bid for most of the assets of bankrupt ISP PSINet. One reason is that there's an oversupply of network equipment, he says. The book value of a switch that was purchased two years ago won't necessarily reflect its market value today. Another reason is that equipment may be outdated or located in a market where it can't earn a positive return.

And there are operating expenses associated with keeping the equipment and networks up and running.

Nevertheless, Schaeffer thinks Cogent will be getting a good deal if its PSINet bid goes

through. He says the reason is that the two companies can share a backbone, letting PSINet reduce its operating expenses and become profitable.

Incumbents getting into game

Smaller carriers aren't the only ones attending telecom fire sales.

"Some of these assets are being bought by large carriers, and in some cases they don't even need them right away. The assets are scheduled to go in over the next two to three years," says Dan Schryer, a managing partner with Venture Asset Group, which specializes in finding buyers for the equipment of bankrupt firms, such as wireless provider Teligent. "[The carriers are] buying the equipment now because of the low prices."

While the glut of telecom gear on the market might help some smaller providers expand their markets, Sean Doherty, a partner with Venture Asset Group, says the large carriers will ultimately benefit the most.

"Some of the smaller guys may be able to do OK with the cheaper infrastructure," he says. "But a lot of them aren't going to make it."

Those that do make it, Doherty says, will continue to focus on building small, regional franchises and not provide broad-based competition to incumbent providers.

Ultimately, this means business customers will have less choice, he says.

"Less choice means telecom prices are likely to rise," Doherty says. "And monopolies will begin to develop again." ■

A quick Sprint

While the Web hosting market has languished recently, Sprint has been active. Here's how:

- While other hosting providers closed facilities, Sprint opened eight new data centers in 14 months.
- Since December, Sprint opened data centers in Denver, Santa Clara and Los Angeles.
- Sprint last year expanded its hosted offerings with its application infrastructure management platform and partnerships with companies such as systems management firm NOCpulse.

Sprint

continued from page 47

Perhaps its biggest steps into the market have been recent customer wins that include eBay and Yahoo. However, analysts say both customers are using collocation services, not the managed offerings that Sprint is focused on providing.

"We're beginning to build momentum by the kinds of customers that we're picking up," says Keith Paglusch, president of E-Solutions.

As for eBay, Kevin Pursglove, senior director of communications, says Sprint's fledgling status in the hosting market was of little concern as eBay conducted a yearlong search for a hosting provider. eBay wanted hosting service outside the San Francisco Bay Area in order to improve site availability and disaster recovery.

Sprint offered a Tier-1 Internet backbone, reliability, scalability and financial viability — all at the right price, Pursglove says. "We were looking at performance to date as well as the opportunity to deliver a first-class product to eBay in the future." Whether Sprint had gotten into the market late "was not an issue to us," he says.

As for that late entry, Paglusch says a failed merger with WorldCom in late 1999 and early 2000 set Sprint back, but also gave it a chance to learn from the mistakes of competitors.

"What we learned is you don't want to go in and just be a collocation provider," he says. "You want to make sure your focus is on managed solutions and total end-to-end solutions."

In addition, Sprint took a conservative approach to building data centers.

"We don't go in and build out a huge data center," Paglusch says. "We may lease a bunch of space, but we build it out in small increments and we'll add to it as we gain customers."

Sprint E-Solutions is focusing on five areas: supply-chain management, infrastructure services, messaging, e-commerce and content management. Paglusch says Sprint stands apart from other hosting providers in terms of security, its nationwide IP network and its ability to integrate wireless into its services.

While Sprint may be coming into the market having learned from the mistakes of others, analysts say its market share stands at less than 1%. Paglusch says about 70% of Sprint E-Solutions customers are getting managed services, but includes managed security, managed networks and managed installation in that mix. Analysts, which figure managed hosting services as above and beyond network management or managed firewalls, say the majority of Sprint customers are collocating.

Analysts also say Sprint has the potential to be a strong player.

"They've got a great network and they've got a great brand name. They've got brand-new facilities that they built internally that are up to par with anything else in the market," says Andrew Schroepfer, president of Tier 1 Research. "For an enterprise that wants a stable company that's proven their intelligence by learning lessons from the rest of the marketplace and has a credible service offering, Sprint should definitely be on the list for consideration." ■

BUSINESS-CRITICAL Switching

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6500 Series

IT IS AN INDISPUTABLE FACT in the e-business world that the speed at which revenues flow from new applications is directly related to the speed at which these applications can be deployed. Quickly deploying these applications is the cyber-world's equivalent of rapidly building brick-and-mortar storefronts to capture new customers.

And because new business applications can sometimes generate sudden and sustained bursts of increased business activity, the underlying network infrastructure must be both scalable and full-featured to support the demands of client services.

To meet these and other lofty requirements of Internet business applications, Cisco Systems offers the Catalyst 6500 Series platform for both enterprise and service-provider networks. In addition to being the fastest switch series available today, the Catalyst 6500 Series is designed from the ground up to address the toughest network challenges, including:

- High availability, performance, and scalability
- Intelligent multilayer switching
- Increased requirements for gigabit switching density
- Voice and data integration
- LAN/WAN/MAN convergence

PROOF POSITIVE

"With the recent introduction of the Cisco Catalyst 6513, the latest member of the Catalyst 6500 Series," says Ben Goldman, manager, product marketing for the Catalyst 6500 Series, "Cisco has proven that we can continue to scale bandwidth, performance, and density while maintaining line-rate intelligent services."

That's been borne out by independent lab tests of Cisco's Catalyst 6509 and Catalyst 6513 switches, which showed stunning aggregate throughput with equally stunning services enabled performance. Test engineers from Princeton, NJ-based Miercom, a leading independent product testing lab, put the switches through a comprehensive set of tests that included "abnormally stressful tasks and network failures."

Even under extreme duress, the Catalyst 6500 series switches delivered "full line-rate performance with low levels of latency and no packet loss, no matter how large the packet in the test." By maintaining a consistent and low level of latency, the switches' performance clears a major and business-critical hurdle in supporting delay-sensitive applications, including IP telephony and video conferencing.

When Miercom's engineers configure the Catalyst 6500 Series switches with multiple advanced features, the switches suffered no performance degradation or changes in latency. And as shown in the chart, the aggregate throughput of each switch equaled the theoretical maximum—better than 210 Mpps, for the Catalyst 6513. (A complete report of this stunning test is available as a printable PDF at www.cisco.com/go/6500miercom).



Cisco Systems offers the Cisco Catalyst 6500 Series platform—with the latest Catalyst 6513 Switch.

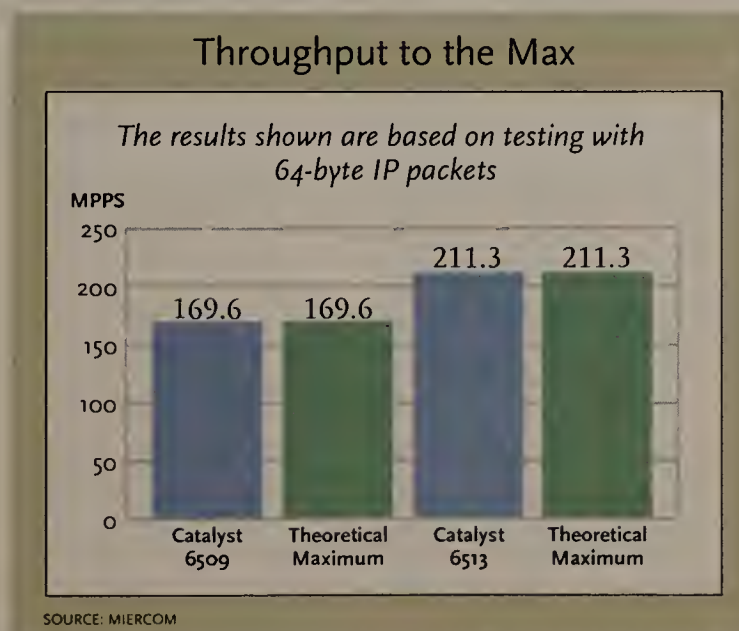
Moreover, Miercom's tests found that the Catalyst 6500 switches continued to provide advanced services while consistently maintaining performance under heavy traffic loads. Such performance and service provisioning is vital for environments in which users expect a switch to maintain peak performance, even if it is employing multiple advanced features while being hit with various network flaps and glitches.

CATALYST FOR QUALITY

The Catalyst 6500 Series supports Cisco IOS software, which delivers a comprehensive suite of services for managing network security, allocating and enforcing QoS, and enabling network resilience. Quality of service is the lifeblood of Internet business applications. In its tests, Miercom simulated various system failures, and each time the Catalyst switches posted the "exact same results, confirming that common logic failure has no effect on QoS enforcement."

"For today's enterprise and service provider networks, it is essential to have the capability to deploy Internet business applications on a highly scalable infrastructure," notes Peter Alexander, vice president of marketing at Cisco's Internet Systems business unit. "The Catalyst 6500 Series is not only scalable, it also has the high availability and key network services required by today's most demanding business environments."

The Catalyst 6500 Series is a key element of the Cisco Content Networking architecture, designed to deliver Internet business applications including e-commerce, supply chain management, and workforce optimization.



Download the Miercom Testing Report

on Multilayer Gigabit Switches—Cisco Catalyst 6509 and Cisco Catalyst 6513 at www.nwfusion.com/go/cisco1

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Short Takes

■ ATM switch start-up **Equipe Communications**

last week laid off 25 employees, or 19% of its staff, in an effort to conserve cash as it readies the launch of its core switch later this month, according to a report in *Mass High Tech*.

At the same time, Equipe has landed an additional \$40 million in funding. The funding, Equipe's third round, will be announced later this month, sources say. Equipe says the reports were "leaks" and that it will issue an official announcement later this month. Equipe laid off 15 employees nine months ago to secure third-round funding, which the company expected to amount to \$60 million to \$70 million (see www.nwfusion.com, DocFinder: 8445). Equipe is still on schedule to launch the E3200 switch later this month, but the company is trying to get into two Tier-1 trials for which requests for proposal were recently issued, sources say. After last week's reduction in workforce, Equipe now employs 105. With the third round of funding, Equipe has now raised \$100 million since it was founded in 1999.

■ **Metro-Optix** last week announced a multimillion-dollar contract to supply **DixieNet Communications**, a Mississippi competitive local exchange carrier, with optical gear. Metro-Optix will install its **CityStream** bandwidth managers in DixieNet's fiber-optic network. It also will provide training and related services as part of the contract. Deployment, which began in February, started with seven local exchanges. Metro-Optix reports it will add another 10 exchanges by year-end. Currently, DixieNet operates 75 phone exchanges that service more than 20,000 residential and business customers. The company provides dial-up and high-speed Internet access, including DSL, frame relay and point-to-point connections. DixieNet plans to offer new services such as video-conferencing and video-on-demand, with Metro-Optix' CityStream gear. www.metro-optix.com

Metro Ethernet's third option

Protection-switching technology offers standards-based SONET-like restoration.

■ BY TERRI GIMPELSON

SANTA BARBARA, CALIF — Yet another alternative has emerged for providing SONET-like restoration to metropolitan Ethernet services, which is key to making the LAN technology "carrier-class."

Occam Networks, a developer of broadband loop carrier equipment, last week unveiled its Ethernet Protection Switching (EPS) technology as a standards-based technique for recovering metropolitan Ethernet services in 50 msec or less. EPS joins the emerging IEEE 802.17 Resilient Packet Ring (RPR) standard and the Metro Ethernet Forum's endorsement of Multi-protocol Label Switching (MPLS) as a third option for equipping Ethernet with SONET-like resiliency.

However, unlike the other two methods, EPS uses the standard IEEE 802.3 Ethernet Media Access Control (MAC) protocol supported by all network equipment. Both RPR and the MPLS protection schemes seek to define new MAC layers.

EPS is available as a standard feature of Occam's broadband loop carrier equipment. But it can also be used by other vendors, Occam says.

EPS, which works over copper and fiber, can be implemented in a variety of network topologies, including ring, star, tree and string.

A string topology is a network in which a node connects with another node, which connects to the following node and so on, in a line. It is assumed that each node performs switching functions between upstream and downstream traffic and on traffic within the node itself.

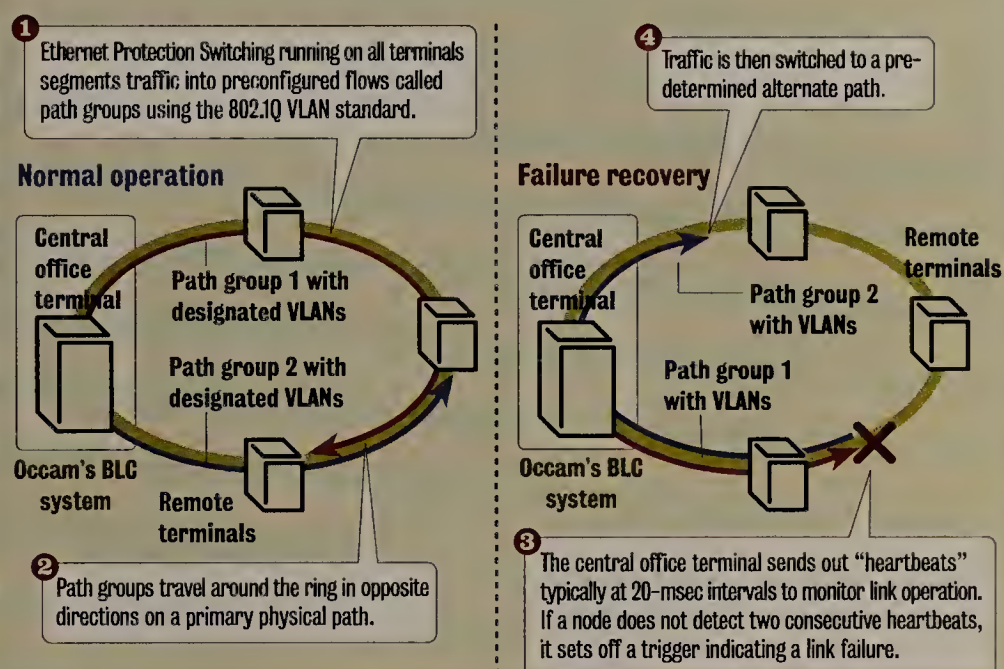
Ken Twist, program director of broadband access for Ryan Hakim Kent, an industry analysis firm in San Francisco, says Occam's ability to make a network look and behave like SONET could make EPS a big success with large carriers.

"These carriers will not deploy gear unless it can handle voice traffic," Twist says. "The fact that Occam has spent months in the lab trying to get people used to this is a plus. Ethernet comes with a stigma, and to try and change that mindset, to change that paradigm, is going to take some time."

"These guys are the first to propose packetizing the last mile," Twist says. "While that shows great innovation, it could also hurt the adoption process."

Recovery plan

How Occam's broadband loop carrier (BLC) system protects service providers' Ethernet services from failure:



How it works

EPS runs in all nodes on a network. It segments traffic into preconfigured flows called path groups using the standard IEEE 802.1Q virtual LAN (VLAN) protocol. Path

groups travel in opposite directions on a preconfigured primary physical path. Each path group can contain multiple VLANs, and the network is set up so that no VLAN

See ESP, page 52

Start-up rolls out high-end optical switch

Ceyba C420 supports 10G and 40G wavelengths.

■ BY TIM GREENE

OTTAWA — Start-up Ceyba last week unveiled its first product, a core optical switch designed to limit the need for expensive conversions between electrical and optical signals in service provider networks.

C420 can transmit 40G bit/sec wavelengths as far as 930 miles and 10G bit/sec wavelengths 2,480 miles. It can pack 160 10G bit/sec wavelengths on a single fiber for a total capacity of 1.6 Terabit/sec. If just 40G bit/sec wavelengths are used, it can squeeze 40 on a fiber for a total of 3.2 terabit/sec. The device can mix 10G bit/sec and 40G bit/sec on the same strand.

The switch can be fitted with a range of multiplexing cards, including a four-port 2.5G bit/sec card that multiplexes to a 10G bit/sec port, and a four-port 10G bit/sec card that multiplexes to a 40G bit/sec port. It also has 10G and 40G bit/sec transponder cards. The 10G bit/sec cards come in two varieties: one for long haul and one for ultralong haul.

In addition, the C420 optical switch can be tuned to handle long-haul and ultralong-haul wavelengths on the same fiber and to support traffic on different types of optical fiber. The device can drop or add wavelengths, acting as what the company

See Ceyba, page 52

ESP

continued from page 51

completes a closed ring.

Each path group is assigned a predefined alternative physical path in the event of a failure. Failures are detected using a "heartbeat" that monitors link operation. Failure

by a node to detect two consecutive heartbeats sets off a trigger within the node, and traffic is automatically switched to the alternate physical link.

Occam says heartbeats are sent in 20-msec intervals in typical network designs. Two 20-msec heartbeats missed sequential-

ly, added to a switchover time of less than 10 msec, results in the 50-msec failover time.

The alternatives

RPR uses two protection mechanisms: packet wrapping and steering.

Packet wrapping means that packets trav-

el in the opposite direction in the event of a failure. This is similar to SONET's protection mechanism.

Steering involves notifying all nodes of a failure and subsequently directing traffic away from a fault. Steering is the default protection mechanism in the most recent draft of the RPR standard, while packet wrapping is optional.

MPLS also has two distinct methods for restoring Ethernet in 50 msec or less, according to the Metro Ethernet Forum.

The first, called Aggregated Link and Node Protection, addresses local network protection and makes use of MPLS Label Switched Paths. The second, called End-to-End Path Protection, accommodates older network equipment that may not support MPLS. ■



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■ PROFILE: CEYBA

Location: Ottawa

Founded: May 1999

Product: C420 optical core switch and M900 management platform.

CEO: Scott Marshall

Financing: \$93 million from Bessemer Venture Partners, Worldview Technology Partners, Altamira, U.S. Venture Partners, New Enterprise Associates and Alta Partners.

Competitors: Sycamore, Tellium, PhotonEx.

Fast fact: Four of the five company founders are from Nortel.

Ceyba

continued from page 52

calls a wave hub. Individual wavelengths or whole bands of them can be redirected down other fibers at each hub.

Ceyba says it eventually will add photonic switching capabilities to the device so wavelengths are reflected to different paths. This will enable service providers to keep costs down as they boost bandwidth across their networks, the company says.

Ceyba did not provide specify C420's low use of power. It says efficient use of Raman amplification and forward error-correction enable it to discern wavelengths at greater distances with lower power than other vendors' equipment requires.


The switches support single-mode and dispersion shifted fiber, Ceyba says, and equalize the power of each wavelength. As more wavelengths are added to a fiber, C420 adjusts the power of each so they don't disturb each other.

The switches also come with diagnostic tools, such as bit-error-rate testing, used to measure link performance. They also can measure signal-to-noise ratios and the loss of strength of signals between points.

The company says its gear can reduce the time to provision a cross-country wavelength from 38 days to five.

The first version of C420 will be available in June. Ceyba did not release pricing.

Ceyba: www.ceyba.com



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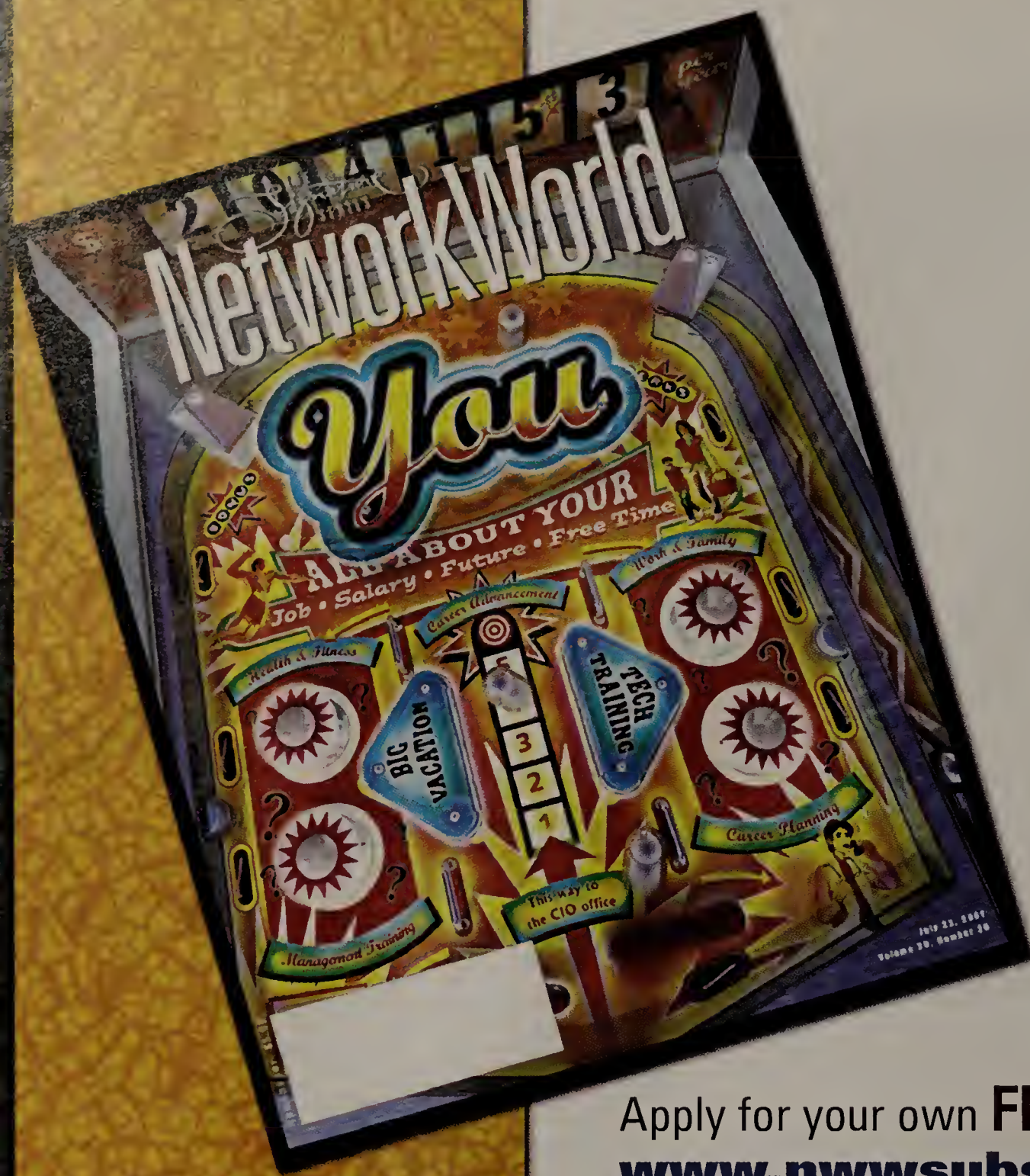
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Technology ^{update}

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

802.15 aims to secure wireless PANs

■ BY ARI SINGER

Wireless network standards such as IEEE 802.11b and Bluetooth traditionally have focused on quality of service and security, but they either lack sufficient industry support or impose requirements that are too costly to satisfy emerging demand for wireless communication.

The IEEE 802.15 Working Group is defining new standards for use in wireless personal-area networks (PAN). In addition to the traditional concerns of QoS and security, it is addressing power consumption, complexity, size and cost constraints. The result will be specifically tailored for short-range, low-cost wireless devices.

The working group is attempting to overcome three primary challenges: balancing cost with range and bandwidth, offering coexistence with other wireless devices and providing security in roaming environments.

802.15 wireless PAN solutions

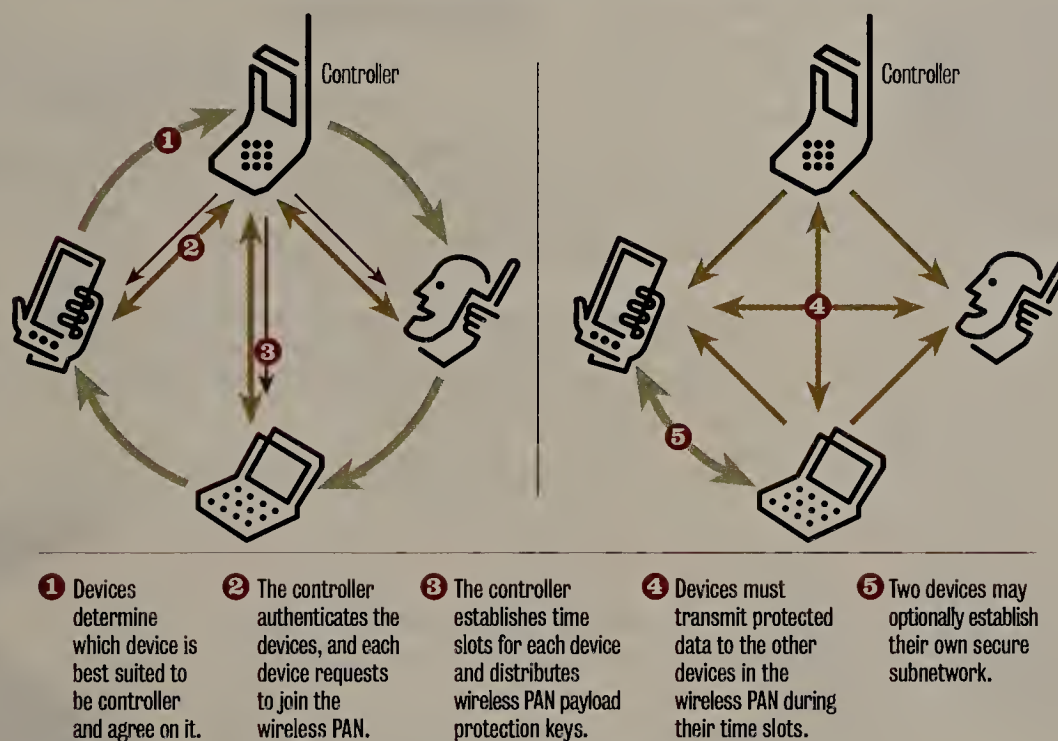
The 802.15 standard defines specifications for media access control (MAC) and physical layers for wireless devices in a wireless PAN. The physical layer transmits in one of several channels in the 2.4-GHz range. The MAC specifications define the format of messages and the procedure for secure establishment of wireless PANs.

A wireless PAN consists of a dynamic group of less than 255 devices that communicate within about a 33-foot range. Unlike with wireless LANs, only devices within this limited area typically participate in the network, and no online connection with external devices is defined.

■ HOW IT WORKS

802.15 secure wireless PAN

802.15 devices establish a dynamic wireless network to provide secure short-range communications.



One device is selected to assume the role of the controller during wireless PAN initialization, and this controller device mediates communication within the WPAN. The controller broadcasts a beacon that lets all devices synchronize with each other and allocates time slots for the devices.

Each device attempts to join the wireless PAN by requesting a time slot from the controller. The controller authenticates the devices and assigns time slots for each device to transmit data. The data may be sent to the entire wireless PAN using the wireless PAN destination

address, or it may be directed to a particular device.

The 802.15 working group is defining different versions for devices that have different requirements. 802.15.3 focuses on high-bandwidth (about 55M bit/sec), low-power MAC and physical layers, while 802.15.4 deals with low-bandwidth (about 250K bit/sec), extra-low power MAC and physical layers.

The emphasis on minimizing cost, complexity and chip size is permeating all aspects of the standardization process. The selection criteria for power manage-

ment, security algorithms and QoS all include consideration of these features. The short-range nature of communication in a wireless PAN also means reduced transmission power and cost.

The security requirements for 802.15 networks are different from more static networks because of the dynamic nature of wireless PANs. As a result, the working group is looking into specifying public-key solutions for authentication and key exchange, letting devices that have not been in contact previously establish secure communications without revealing any secret keying material.

Once the devices have been authenticated, each device in the wireless PAN shares common group (symmetric) payload protection keys for encryption and data integrity. Devices also may use the authentication mechanism to establish two-party secure subnetworks.

Another issue still facing the working group before completion of the standards is coexistence with other types of wireless devices and among the different types of 802.15 devices. There are several wireless standards that specify transmission in the 2.4-GHz range, and in some cases they interfere with each other.

Despite the remaining challenges, the working group expects to resolve the outstanding issues and provide complete, cost-effective, low-power solutions in the wireless device market.

The standards are scheduled to be completed in the third quarter of this year.

Singer is principal engineer for NTRU Cryptosystems. He can be reached at asinger@ntru.com.

Ask Dr. Internet

By Steve Blass

We're getting a wireless broadband link into our office and we'd like to connect our network to the Internet via the wireless link if it's up, fall back to dial-up if broadband goes down, and drop dial-up when wireless is back. We'd also like to let people on the Internet access our Web server, e-mail server and mailing list manager no matter which link is up. And we'd like network address translation (NAT) protection for the local network.

You can provide demand-dial back-up routing for your small-office site using Linux or Windows RRAS or a dedicated router. Cisco's demand-dial routing implementation is particularly robust (new 25XX series routers cost less than

\$500) and provides the intelligence to drop the dial back-up link when the broadband connection comes back up. Inbound access to your servers via IP address is easy. Coordinating host-name resolution regardless of which link is up might be more complicated, but NAT protection for the local net is just a matter of configuring NAT on the gateway interfaces. You can find the Linux demand-dial how-to at www.nwfusion.com, DocFinder: 8439, Windows instructions at DocFinder: 8440 and the Cisco configuration guide at DocFinder: 8441.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark
Gibbs



The hype and buzz of Web services

As an aside, let us note that the top 10 anagrams of "information superhighway" are (in reverse order):

10. Enormous, hairy pig with fan.
9. Hey, ignoramus — win profit? Ha!
8. Oh-oh, wiring snafu: empty air.
7. When forming, utopia's hairy.
6. A rough whimper of insanity.
5. Oh, wormy infuriating phase.
4. Inspire humanity, who go far.
3. Waiting for any promise, huh?
2. Hi-ho! Yow! I'm surfing Arpanet!
1. New utopia? Horrifying sham.

The skinny

Be that as it may ... back to Web services. We mentioned standards, and when it comes to Web services there are a lot to choose from. They include the Simple Object Access Protocol (SOAP), Web Service Description Language (WSDL), Universal Description, Discovery and Integration (UDDI) and XML.

For all of the buzz and hype about Web services, most people don't really get what the excitement is about.

In short, Web services are central to how services will be provided over the 'Net because they remove the barriers to communication between different programming languages and different computer platforms.

And where we are with Web services is pretty advanced. Web services have evolved into a five-layer model providing, as it were, a stack. This stack, going from lowest to highest, consists of network, transport, packaging, description and discovery layers.

At the network layer is, well, a network.

Where we are with Web services is pretty advanced. Web services have evolved into a five-layer model

That is, some means of getting data from one machine to another. While Web services are associated with the Internet and therefore TCP/IP, you could replace TCP/IP with messages written in ballpoint pen and transported by carrier pigeon, or shouted messages passed from one tin can to another using wet, hairy string. However, we will stick with TCP/IP in our considerations.

The transport layer is the protocol that encapsulates the message. In general, for

Web services the protocol is HTTP but you could use FTP, telnet or e-mail.

The packaging layer is the next layer of encapsulation — it makes messages transportable between different platforms and services by standardizing the syntax of the content. This is the realm of the SOAP standard. SOAP is an XML-based language that packages function calls and entire documents.

The description layer provides the mechanism to describe a service. The most prevalent of the standards in this layer is WSDL, an XML-based language that describes what a Web service's public interface is capable of. Thus, a WSDL description of a Web service provides a client with everything needed to use the service.

Finally, the discovery layer makes it possible for a program to find a Web service. Here we find UDDI. UDDI provides a global directory of Web services that allows Web service discovery.

Over the next few weeks we'll delve deeper into what Web services are and the technologies and protocols that underlie them and how they apply to you.

Request Web service at gearhead@gibbs.com.



Cool Tools

A roundup of the latest neat stuff.
By Keith Shaw

The arrival of Pentium 4 notebooks

Intel last week introduced the mobile Pentium 4 Processor-M, designed specifically for notebook computers. The new processor runs at 1.7 GHz and includes a 400-MHz processor system bus and 512K-byte Level 2 cache. The processors are shipping in volume worldwide.

Several PC makers have quickly announced notebooks based on the new chip.

- Compaq announced the Presario 2800 and Evo N800 notebooks, both with the Pentium 4 1.7-GHz processor. Presario 2800 includes integrated 802.11b wireless support, weighs less than 6 pounds, has a 30G-byte hard drive, 15-inch SXGA+ panel, DVD/CD-RW drive and Universal Serial Bus (USB) 2.0 support. Pricing starts at \$2,400.

Evo N800 is a slim, 1.3 inches thick and includes up to a 60G-byte hard drive, choice of up to 15-inch panels including UXGA+ resolution, various optical drives including a DVD/CD-RW combination drive, and USB 2.0 support. N800 is expected to be

available in the second quarter. Pricing was not announced. For more information, go to www.compaq.com.

- Dell announced the Inspiron 8200 and Latitude C840 notebooks with the new processor. The Inspiron 8200 base configuration, which starts at \$1,700, includes a 1.6-GHz mobile Pentium 4 processor, 128M bytes of RAM (PC2100 DDR), a 20G-byte hard drive, 15-inch SXGA+ LCD panel, 24X CD-ROM drive, and integrated 56K bit/sec modem and 10/100 Ethernet.

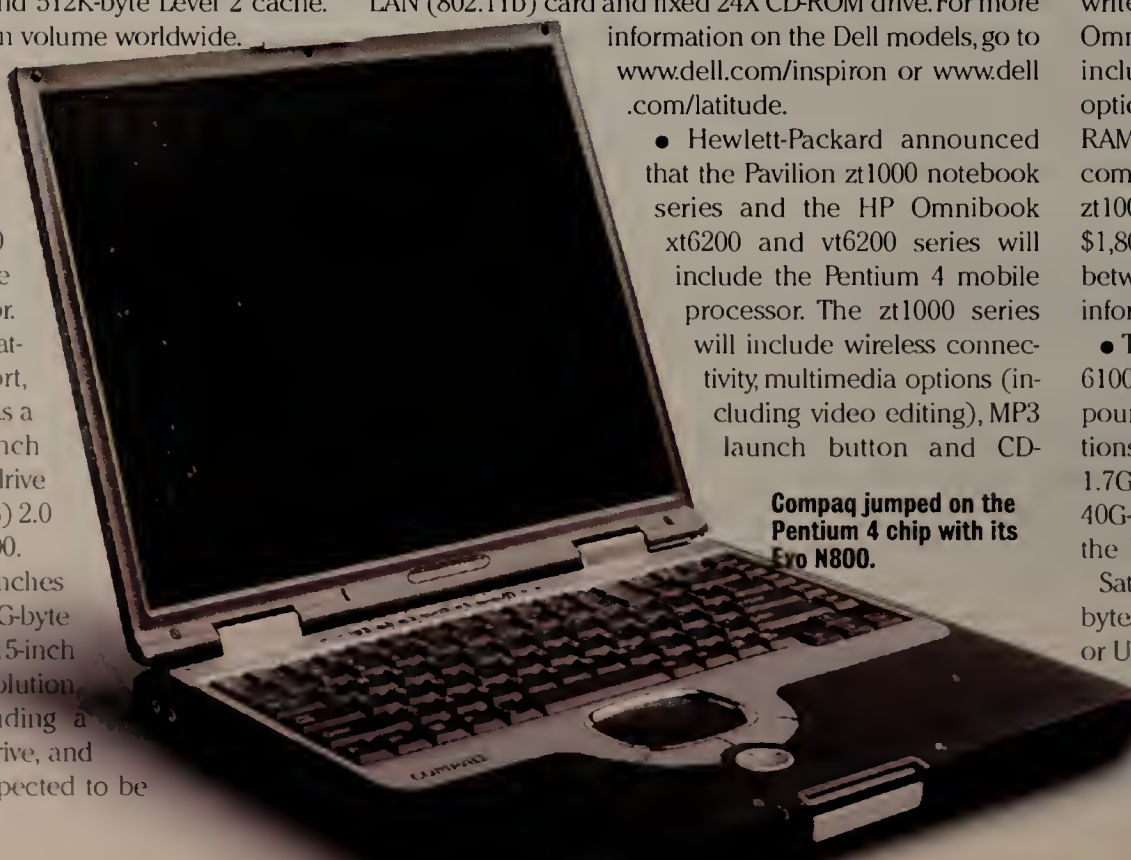
Latitude C840 starts at \$2,607, and includes a 1.6-GHz Pentium 4-M processor, 128M bytes of RAM, 15-inch UXGA display, 20G-byte hard drive, integrated 56K bit/sec modem, 10/100M bit/sec Ethernet, internal TrueMobile wireless LAN (802.11b) card and fixed 24X CD-ROM drive. For more information on the Dell models, go to www.dell.com/inspiron or www.dell.com/latitude.

- Hewlett-Packard announced that the Pavilion zt1000 notebook series and the HP Omnibook xt6200 and vt6200 series will include the Pentium 4 mobile processor. The zt1000 series will include wireless connectivity, multimedia options (including video editing), MP3 launch button and CD-

Compaq jumped on the Pentium 4 chip with its Evo N800.



Presario 2800 includes integrated 802.11b wireless support.



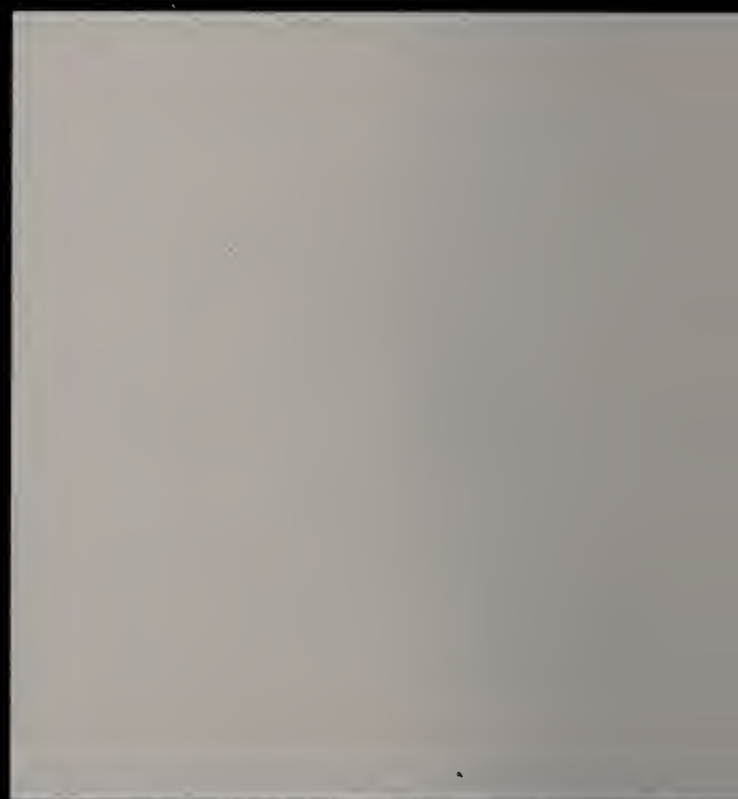
writer. The two Omnibook notebooks will include 1.7-GHz processors, integrated wireless option, up to 15.1-inch SXGA+ display, up to 1G bytes of RAM, up to 40G-byte hard drive, and a DVD or DVD/CD-RW combination drive. Pricing begins at \$2,300 for the Pavilion zt1000 series. Prices for Omnibook xt6200 range from \$1,800 to \$2,200; the Omnibook vt6200 series ranges between \$2,400 and \$3,300. Go to www.hp.com for more information.

- Toshiba announced the Tecra 9100 and Satellite Pro 6100 notebooks. Tecra 9100 weighs just more than 5 pounds, and includes integrated 802.11b wireless functions, Bluetooth, i.Link (IEEE 1394) port, speeds up to 1.7GHz, a 14.1-inch TFT display, a DVD/CD-RW drive and 40G-byte hard drive. Pricing is \$2,830 for Tecra 9100 with the 1.7-GHz processor.

Satellite Pro 6100 includes the 1.7-GHz processor, 256M bytes of SDRAM, a 40G-byte hard drive, 15-inch TFT SXGA+ or UXGA display and a DVD/CD-RW drive. Pricing starts at \$2,400 for this series. Go to www.csd.toshiba.com for more information.

Send cool tools news to kshaw@nww.com.







Spring InfiniBand Solutions Conference

The InfiniBand® Trade Association, led by Compaq, Dell, HP, IBM, Intel, Microsoft, and Sun will be hosting the **InfiniBand Solutions Conference in San Francisco from April 9-11, 2002** to educate data center managers about InfiniBand Architecture and highlight the latest in InfiniBand product development.

Conference highlights include:

- **Keynote speeches** by Dr. Tom Bradicich, Director, xSeries Server Architecture and Technology of IBM and James Gruener, Yankee Group.
- Two full days of **InfiniBand Architecture training** designed specifically for IT Managers
- **Exhibit Pavilion** featuring the latest in InfiniBand solution development
- **Hosted IT Reception** with leading InfiniBand Architecture experts

Because the InfiniBand Trade Association strives to educate IT professionals on the deployment of InfiniBand fabrics, it is pleased to offer a free pass* to the Spring 2002 InfiniBand Solutions Conference to IT data center managers (a \$195 value).

Register now!

To register for your free pass* to the Spring 2002 InfiniBand Solutions Conference (a \$195 value), use source code: **GA113** at: www.infinibandta.org

For more information

Please contact the InfiniBand Trade Association at **administration@infinibandta.org** with any questions you have regarding the InfiniBand Architecture or the InfiniBand Solutions Conference. We look forward to seeing you in San Francisco!

*Offer applies IT Professionals only. Representatives of IBTA member companies are exempt from this offer.

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EDITORIAL

John Dix

Catching up with EasyAsk

In the year that has slipped by since last we looked at e-comm search-engine company EasyAsk, it has landed big-name accounts such as Lands' End, Talbots and Coach, released a Unix version of its software and added a new high-end product.

Not bad for a little company with 40 people.

To refresh your memory, EasyAsk is out to solve a problem best described with this real world example: Go to Ritzcamera.com and search for "Canon digital cameras" and the site returns one page listing two accessories and not one \$400-plus camera. The company should be weeping.

Now go to Coldwatercreek.com, a customer using EasyAsk's Precision Search product and enter "women's red sweaters, size small." This detailed search returns a bunch that fit the bill, including some that aren't even described as sweaters, such as the "V-neck cardigan."

How does EasyAsk do it? Instead of relying on text relevancy like most search engines, EasyAsk grooms search queries and presents detailed requests to your product database. (For more detail on how it works, see www.nwfusion.com, DocFinder: 8455.)

The company says its software, which is loaded on your existing servers, can make your site searches 90% accurate. And the system learns and gets better by itself. EasyAsk CEO Robert Alperin says after six weeks, 98% of Coldwater Creek inquiries were being answered correctly. That should result in increased sales.

Alperin says EasyAsk conducted a four-week test at Coach in which half of all search queries were routed to Precision Search while the rest were handled the traditional way. After four weeks, for every \$1 of sales generated by the old system Precision Search generated \$4 in sales.

In beta test now is Search Advisor, a high-end product designed to help users realize they can use more than one to three words to search. With Search Advisor, if you search for "women's sweaters" the tool returns a screen showing some sweaters, but it also brings up a list of sub-heads for: categories (cardigans, pullover); brand (Anne Klein, Carole Little); fabric (blend, cashmere); and so on.

This enables the customer to focus his search while letting the retailer show the range of its products, which should lead to increased sales.

Although EasyAsk's focus is still on Web retail, Alperin says the technology could help large business-to-business sites as well.

For those of us who have been frustrated by Web site searches all we can say is bring it on.

— John Dix
Editor in chief
jdix@nww.com

Buyer beware

In his Backspin column "Let the software buyer beware" (www.nwfusion.com, DocFinder: 8426), Mark Gibbs says that when a person buys a piece of software, one can assume that he is "making an informed choice that includes considering the terms of the license." This makes two large assumptions: one, that the buyer can read the license before buying the software; and two, that the average buyer can understand all of the legal mumbo-jumbo. If I buy a piece of software, I get to read the license agreement only after I have opened the package. Ever try returning opened software, other than for a physical defect with the media? You simply get another copy of the same software. There has to be some relief for the buyer who doesn't agree to the software license.

Brent Ruhlen
Newport News, Va.

Regarding Mark Gibbs' column "Let the software buyer beware": While I do not in any way condone consumers' stealing Microsoft's software, or any other company's, I still do not believe that caveat emptor applies here. Caveat emptor should only apply where there is a choice, and Microsoft's licensing model enjoys a situation where there really isn't an alternative.

I fully expect that people should pay Microsoft for a license to run Windows. But if the computer the software was purchased for breaks down or becomes obsolete, the buyer should have the right to transfer that license to a different machine. Until recently, Microsoft never even suggested that its license was tied directly to one computer. I resent having to attach the software license key to the computer case, with the intent that the operating

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

opinions!

system can never be used on any other computer.

William Orr
Idaho Falls, Idaho

Dig this

I enjoyed Joel Snyder's column "Integrating the 'Net into net management" (www.nwfusion.com, DocFinder: 8427). However, using NSLOOKUP for DNS maintenance is outdated. Dig is the tool of choice.

I also would recommend that every administrator get a shell account. Maybe this is old school, but it has saved me more than once.

Tony Wasson
Phoenix

HTML hell

Regarding Dave Kearns' column "Keeping up with the times" (www.nwfusion.com, DocFinder: 8428): Since when is HTML-formatted e-mail an improvement? It clogs bandwidth, disk space and is unreadable on the majority of non-PC devices.

Kearns seems to imply security is a nonissue, but it isn't. Shall we count the many benefits of imbedded VBScript?

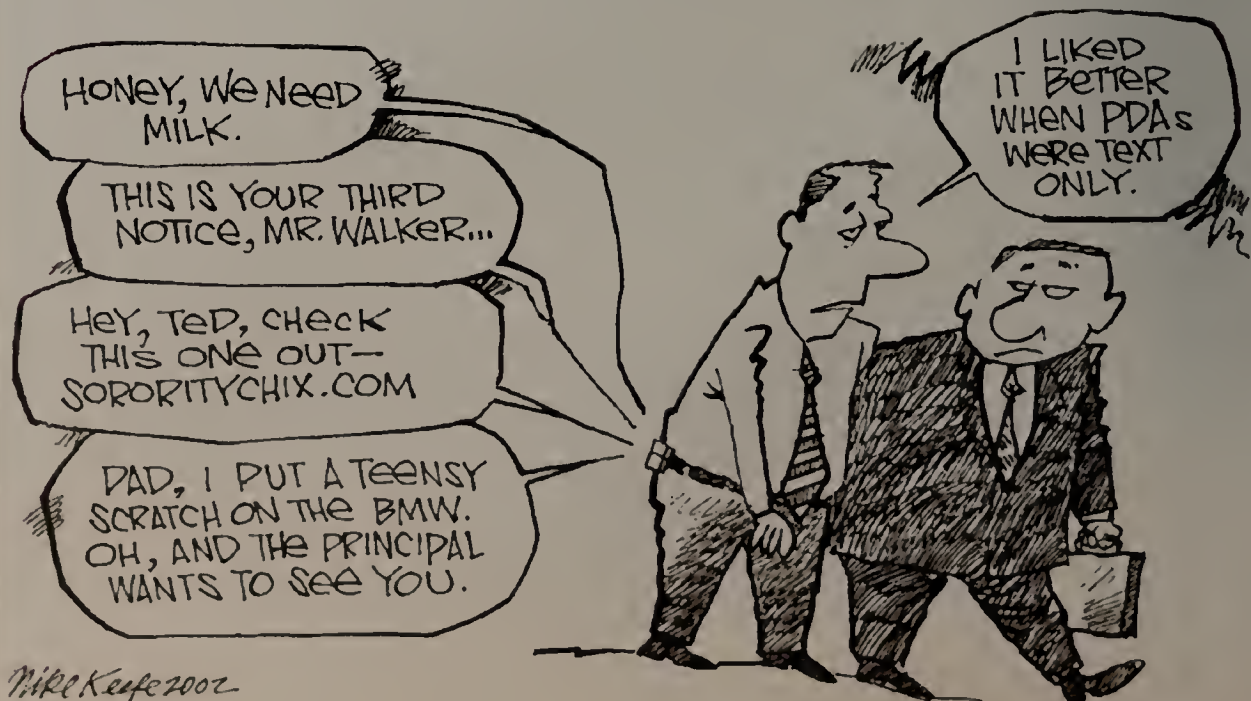
Furthermore, Kearns' analogy to television is a bad one: Color TV improved the product because it provides a truer representation of what is being sent. And if I don't want to watch TV in color, I can still get most if not all of the same value from a black-and-white set; the display doesn't turn into gibberish.

I don't have any problem with people wanting to send their ads, redirects and cutesy flower backgrounds along with their e-mail. I just won't see any of it. No loss on my part.

James Taylor
Consultant
East Cobb Group
Marietta, Ga.



More online! www.nwfusion.com Find out what readers are saying about these and other topics. DocFinder: 8424





PACKET EVANGELIST

Steven Taylor

We're putting the final touches on the Network World Voice over IP seminar that will hit six cities later this month and in April. In doing so, we've focused on the key issues the seminar should discuss. They boil down to three major areas: quality of service, the business case and enhanced applications.

QoS deals with the network infrastructure from the LAN to the WAN. Voice over IP undeniably works quite well if you provide more than ample bandwidth for the IP traffic across dedicated, leased lines. But that defeats the whole point of doing voice over IP in the first place. Voice over IP only makes economic sense when it is combined with data services across a converged network. So the problem is how to guarantee, or at least reasonably assure, that delay-sensitive voice traffic takes priority over largely delay-insensitive data traffic.

The business case for voice over IP is proving to be fascinating, indirect and, in some cases, elusive. Here's the first problem. Toll bypass to save on long-distance calls is not the major cost savings. You can go to your local discount store and buy a prepaid calling card for domestic voice service in the U.S. for 3.4 cents per minute, with similarly inexpensive international rates. Or just get all your friends to sign up for AT&T service and call them for a flat rate of \$20

Major issues in moving to VoIP

per month. This is close enough to "free" that the arguments to go to voice over IP for toll bypass become a wash.

Instead, the major benefits will come from other areas, such as simplified moves, adds and changes, and potential cost savings due to reduced staffing needs. A recent case study by Cisco cited an example in which six people rather than eight supported the voice-over-IP infrastructure.

But the major business impact must come from the third area — enhanced applications that go beyond the traditional call center. These applications start with unified messaging — removing the

media-dependent characteristics of voice mail, e-mail and instant messaging. We'll also see the call center evolve into the next-generation contact center that merges the Web with call centers. We'll also look for additional features that enhance collaboration and eventually minimize time-space limitations.

It's these three issues — QoS management, the business case and next-generation applications — that will define how quickly we go down the road to voice over IP. This free seminar can help you determine whether you're ready to start the journey. To register, go to www.nwfusion.com, DocFinder: 8425.

Taylor is president of Distributed Networking Associates and editor/publisher of Webtutorials.com. He can be reached at taylor@webtutorials.com.

Voice over IP only makes economic sense when it is combined with data services across a converged network.

NetworkWorld

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REALITY CHECK

Thomas Nolle

When the regional Bell operating companies were forced to unbundle their DSL service elements, they were reluctant to use direct IP-over-DSL technology because it would have meant they had to wholesale IP-based access to competitors. ATM-based DSL, because there's no direct con-

sumer market for ATM, meant less risk. But now the Federal Communications Commission is offering the RBOCs a way to shield all their residential broadband from competitors. Will it work? Will it revitalize the IP version of DSL?

The FCC ruling, released on Valentine's Day, says that residential broadband Internet services are information services, not telecommunications services. That tiny semantic shift means the services would not be covered by the wholesaling and unbundling parts of the Telecommunications Act of 1996. Certainly that would seem to offer the RBOCs a free shot at the broadband market and an opportunity to ditch ATM for IP. But it's not quite that easy.

First, the FCC's release was a notice of proposed rulemaking, not an FCC order. The distinction means that the FCC is "contemplating" a decision that residential Internet is an information service, but has not yet made that determination. You can be sure that a host of lobbyists already has descended on the Beltway to try to change the FCC's mind.

Second, a finding that residential Internet and DSL are information services wouldn't be a free ride for the RBOCs by any means. The telecom act says that if incumbent local exchange carriers (meaning the RBOCs) offer information services, it has to be out of a separate subsidiary. Further, if the DSL infrastructure were to be used for voice or two-way communications of any sort, the information services classification would be in jeopardy. In short, the RBOCs could shield their DSL infrastructures only by forswearing convergence of voice and data on residential broadband.

To cap it all off, the RBOCs are in the process of rolling separate DSL subsidiaries back into their incumbent operation, after a federal appeals court in January 2001 reversed a previous FCC attempt to

Has the FCC revived IP DSL?

create separate DSL business units for the RBOCs. While it's not politically correct to feel sorry for an incumbent carrier, you do have to feel a twinge for those poor bureaucrats who may now face breaking up (again) what they've just put together. You might also wonder how much all this back and forth is going to cost us in increased communications charges.

Does this seem as stupid and inefficient to you as it does to me? Just a superficial examination of the points above makes it clear that there's no guarantee this FCC order will jump-start broadband deployment. In fact, the RBOCs are likely to wait to see if other FCC orders give them a better deal. The FCC has done little more than turn back the clock to the days before the appeals court reversed the last subsidiary order it issued. We didn't have much DSL then, either, as you'll recall.

It's tempting to play "what-if" here and suggest that if we'd had reasonable regulations in 1998 or 1999, the RBOCs might have looked harder at the question of whether it made sense to deploy pure IP infrastructure for data alone and let current time-division multiplexing technology continue to support voice. Voice isn't a growth market, and there's no reason to redo the way carriers support a service that earns less profit each year. Might a pure Internet mission for DSL have given us a financially viable approach?

We'll never know. The FCC's Valentine's Day gift may bring a sentimental tear to the RBOCs' eyes, but probably won't get those same RBOCs to marry into the IP DSL story. There's just too much inertia to the current ATM-centric approach. We're stuck with it for better or worse, proving to the industry that regulations really do matter.

All of this is the result of an unenlightened piece of legislation we call the telecom act. At a time when popular interest was already focusing on residential broadband, here's a pivotal piece of regulatory framework that didn't even distinguish between voice and data services. We've stumbled over its shortsightedness for half a decade now. We've still got some stumbling to do.

Nolle is president of CIMI, a technology assessment firm in Voorhees, N.J. He can be reached at tnolle@cimicorp.com.

Voice isn't a growth market, and there's no reason to redo the way carriers support a service that earns less profit each year.

What if you could somehow aggregate all your storage from any type of physical device into a single pool that could be easily accessed and centrally managed? That's the promise of virtualization.

Every byte into the pool

60

Virtualization is the buzzword in storage these days, but what does it really mean and how do you achieve it? In this report, we nail down what virtualization is and describe how the major vendors hope to get you there.

61

Visions of virtualization: Implementing storage virtualization today is not for the faint of heart. Experts agree that the technology is not totally baked and that vendors are offering very different approaches. So take it slow.

64

Case study: A Virginia pension fund with 1.5 terabytes of data wanted to get off the costly and time-consuming merry-go-round of upgrading RAID arrays every 18 months. So it went the virtualization route and now can add and dynamically allocate new storage from one console.

BY DENI CONNOR

Virtualization is an abstraction of physical storage. It masks the complexity of underlying networked storage by building a logical view of storage that is isolated from physical devices.

Virtualization software collects data from different types of devices — storage-area network, network-attached and server- or direct-attached — and gathers it into a common pool that can be managed, monitored and administered from a single console.

That sounds great in theory, but how close to reality is true storage virtualization? Today, the much-hyped technology only partially realizes its ambitious goal of unifying different storage devices.

Different vendors are approaching virtualization in different ways: Some implement virtualization on only their storage devices; others virtualize a variety of devices.

But none give users total virtualization — the ability to group all storage devices and hosts under a scalable and open virtualization engine.

"We've got to the point now where if there's a nail, you hammer it," says Jamie Gruener, an analyst with The Yankee Group. "Everyone says they have virtualization, but what does it mean?"

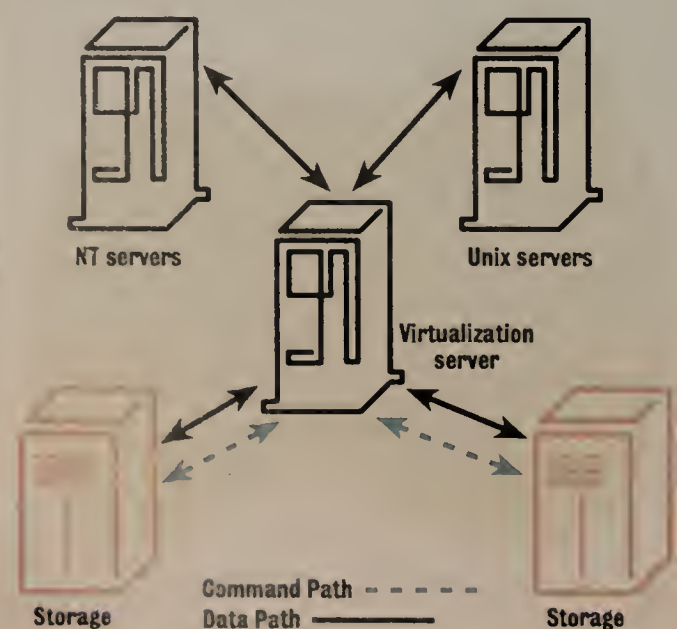
Storage virtualization is implemented in three ways: on the host computer or server, on an appliance, or on the storage array. Within those classifications, vendors provide symmetrical or in-band virtualization, which is in the data path, and asymmetric virtualization or out-of-band virtualization, which is outside the data path.

In in-band implementations, a device sits in the path of data between the server and the storage devices and passes data and intelligence through to arrays attached to it. In out-of-band implementations, data passing between the server, switch or router to the storage devices is managed by the server or array.

For the past year, nearly every storage and systems vendor has touted a form of storage virtualization. Many have created virtualization software of their own; others have adopted software from other vendors; and some still are working diligently on their virtualization plans, hoping to bring out products later this year.

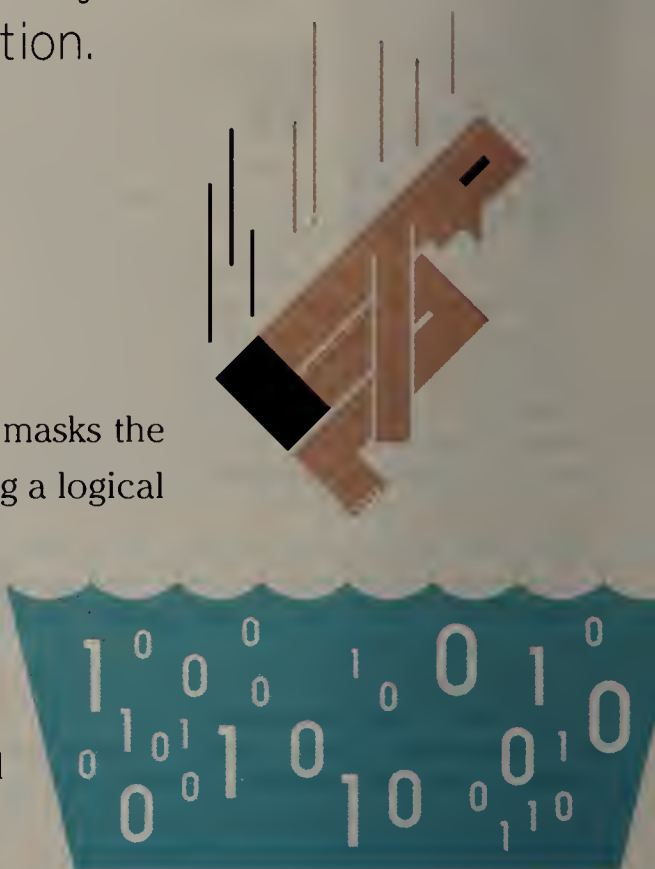
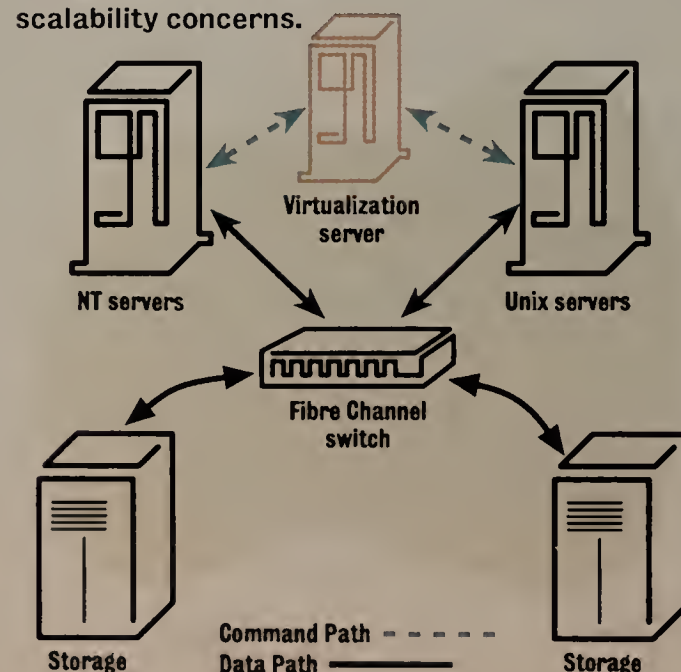
In-band virtualization

Symmetric virtualization is easier to implement but raises concerns about performance bottlenecks and scalability.



Out-of-band virtualization

Asymmetric virtualization requires an agent on each host and is therefore more complex to implement but addresses performance and scalability concerns.



Virtualization is a market every vendor wants to get their hooks into because of its promise of making access to data easier and simpler to administer.

Virtualization of SAN or NAS devices is most common; some virtualization software claims to throw both into the pool at once. And vendors most often take an approach that depends on the type of software or hardware they manufacture. For instance, EMC and Network Appliance say they each virtualize the disks that reside in their storage arrays, but not across product lines.

Of the seven largest storage system and storage vendors — Hewlett-Packard, Compaq, EMC, Sun, Network Appliance, IBM and Hitachi Data Systems — only a few have completely spelled out their virtualization strategies.

- HP offers virtualization at all three levels. The company, which had server and array-based virtualization with its OpenView Storage Allocator and Virtual Array products, acquired start-up StorageApps last year and now offers appliance-based virtualization called SANlink.

- Compaq, as part of its Enterprise Network Storage Architecture 2, plans to make VersaStor appliances that compete with HP's SANlink.

Virtualization vendors

These 17 vendors are offering a variety of virtualization products.

Vendor	Product name	Type of virtualization	Type of data supported
Compaq	Virtual Replicator	Server	SAN/SCSI/NAS
Compaq	Enterprise Virtual Array	Array	SAN
Compaq	VersaStor	Hybrid network	SAN
DataCore	SANsymphony	Network	SAN
DataDirect Networks	Silicon Storage Appliance	Network	SAN
EMC	AutoIS strategy	Array	SAN
FalconStor	IPStor	Network	NAS/SAN
Hewlett-Packard	SANlink	Network	NAS/SAN
Hewlett-Packard	OpenView Storage Allocator	Server	SAN
IBM	Code-named "Storage Tank"	Network	SAN
LeftHand Networks	Network Storage Module 100	Hybrid network	SAN
LSI Logic	Future product	Hybrid network	NAS
LSI Logic	ContinuStor Director	Network	SAN/SCSI
KOM	KOMworx	Server	NAS/SAN/SCSI
Network Appliance	StorageX for NetApp	Server	NAS
Store-Age	Storage Virtualization Manager	Network	SAN
Sun	Solaris Volume Manager, Utilization and Performance Suite	Host	SAN/SCSI
Sun	StorEdge 6900	Array	SAN
TrueSAN	CloudBreak	Network	SAN
Veritas Software	ServPoint Appliance software for SAN and NAS	Network	NAS/SAN
Veritas Software	SAN Volume Manager	Server	SAN
Vicom	Storage Virtualization Engine	Network	SAN/SCSI
Xiotech	Magnitude/Redi Software	Array	SAN

● EMC, known for its powerful enterprise storage hardware, only employs array-based virtualization. Although with its Automated Information Storage strategy, the company is headed toward array- and server-based virtualization that will automatically and dynamically move data within the pool of storage.

● Sun last month unveiled a virtualization array, the StorEdge 6900, which uses software from Vicom.

● Network Appliance last month signed an agreement with storage start-up NuView to pool Common Information File System storage, the type of data that runs on Windows NT/2000 networks. The company declined to comment on other plans.

● IBM offers a future vision of virtualization called Storage Tank, as well as array-based virtualization and appliance technology it obtains from DataCore, a start-up virtualization vendor.

● Only Hitachi would not disclose its virtualization plans.

Beyond the Big Seven, a number of start-ups have come out with virtualization software. Three of the most successful — DataCore, FalconStor and Vicom — offer virtualization software that is installed on industry-standard Intel servers, and sold to systems and hardware vendors for redistribution

IBM and Fujitsu-Softek offer DataCore's SANsymphony; StorageTek and MTI use FalconStor's IPstor software, while Sun uses Vicom's Storage Virtualization Engine in its new StorEdge 6900.

A variety of other established storage vendors and a few start-ups such as TrueSAN and LeftHand Networks also offer virtualization software (see graphic, above).

Storage virtualization is hot territory. It promises to make the management and acquisition of storage simple and easy for IT, letting users shift storage around within the pool where they need it, while maximizing their investment.■

There are three ways to implement virtualization, each with its own pluses and minuses.

Visions of virtualization

■ BY DENI CONNOR

The ability to pool all your storage into one virtual view is inviting, but vendors and analysts alike recommend that you slowly get acclimated before jumping in.

Virtualization, which can be deployed in the server, network or storage array, is still an emerging technology with a meaning that changes depending on which vendor you talk to.

Some vendors only pool data residing on their disk drives; others will pool any device's data; and yet others pool data and offer applications — such as mirroring, data replication and snapshot backups — that analysts say are as important to storage management operations as the virtualization of data itself.

While interest in virtualization is high among end users, even the boldest are still in the early pilot phase. Nonetheless, in spite of the vagaries surrounding virtualization, there are issues IT managers should be aware of when deciding to virtualize data.

● **Server/array-based virtualization:** First is not always best.

Server- and array-based virtualization, in which the software and data-pooling intelligence reside on the server or storage array, were the first virtualization attempts. Vendors with a proprietary interest in servers or storage arrays manufactured virtualization software that ran on each of these devices.

For example, EMC virtualizes data across the drives of individual Symmetrix arrays.

Because array- or server-based virtualization doesn't put additional devices in the direct path of the data, it scales better than network-based virtualization, says Jamie Gruener, an analyst with The Yankee Group.

And deploying virtualization on the host server doesn't burden the other devices in the network, such as Fibre Channel switches or storage arrays. Of course, this method puts an extra burden on the server that has to process the extra virtualization tasks, so it could cause server-based latency.

Vendors argue that array-based virtualization lets them fine-tune all the virtualization capabilities because they are already familiar with the inner workings of the array.

But Steve Duplessie, an analyst with Enterprise Storage Group, says he "doesn't see any advantages [to array-based virtualization] other than we expect RAID boxes to be smart appliances, and that should continue."

● **Network-based virtualization:** Lots of interest, but watch out for bottlenecks and latency woes.

By far the most vendors seem to be lining up behind in-band virtualization software that sits on an industry-standard Intel server running Windows NT/2000 or Linux.

Network-based virtualization suffers from the same latency problem that server-based virtualization does: It puts a burden on the other network servers to always have to look to the virtualization server for information on where their data is. And it exacts a certain performance penalty on the server performing the virtualization.

Analysts also have concerns about the hardness of the server deployed in network-based virtualization. "The knock against current in-band [virtualization] methodologies is that at some point they will become a bottleneck because they reside on Intel servers," Duplessie says.

He adds that while vendors such as DataCore and FalconStor take various approaches such as caching to mitigate potential latency problems, the point remains that the server the virtualization software is deployed on is often less powerful than the servers managing data and I/O.

"At the end of the day, there is an NT box [whose bus

structure is not optimized for I/O performance] in the middle of the road," Duplessie says. "Large companies are very leery about NT being the core of their enterprise virtualization infrastructure."

If latency is a concern, Wayne Lam, vice president of engineering for FalconStor, suggests users try his company's IPStor product, which runs on Sun Solaris as well as Intel servers.

Another concern is that the typical Intel-based server's I/O is not particularly well-suited to configurations where snapshot backups, data replication or caching take place, analysts say.

Compaq and Sun say their upcoming virtualization technologies will overcome these issues. The two companies will introduce hybrid network virtualization devices that exist outside the data path and do not affect the transfer of data between host servers and storage devices.

Duplessie agrees that out-of-band virtualization schemes scale better than in-band. "There's never a scale problem; therefore large distributed enterprises have less of an issue with this approach. However, the downside is putting software on each and every host in the storage network," he says.

An advantage of in-band appliance-oriented virtualization is just that — users need no code on the host servers and because every I/O request and response passes through the virtualization engine, nothing else is required. Appliance-oriented installations are simple and easy to maintain, analysts say.

• What's next: specialized virtualization switches.

Ask analysts where they think virtualization needs to go to benefit users, and they express a common theme.

"The concept of storage abstraction, or virtualization, is here to stay and that users will find more benefit than problems in today's world," Duplessie says.

"While the choice you make today may not ultimately be the best one, you have to start somewhere,"

he says. "The ability to manage disparate devices under a unified virtualization schema outweighs the fact that you may move to a different architecture down the road."

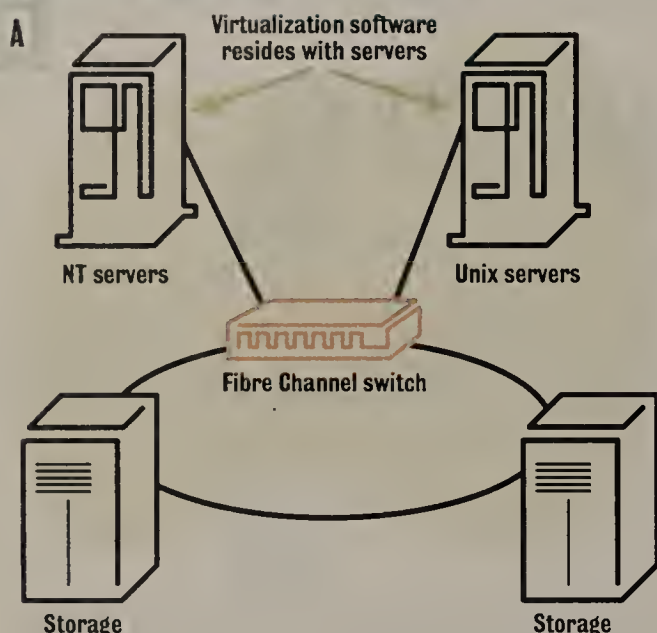
Duplessie looks forward to a new brand of purpose-built switches from vendors such as Pirus Networks and Maranti Networks that feature virtualization running at wire speed with no latency.

And Gruener says users considering virtualization software shouldn't consider any scheme that doesn't support a high-availability configuration or additional components that protect the storage network.

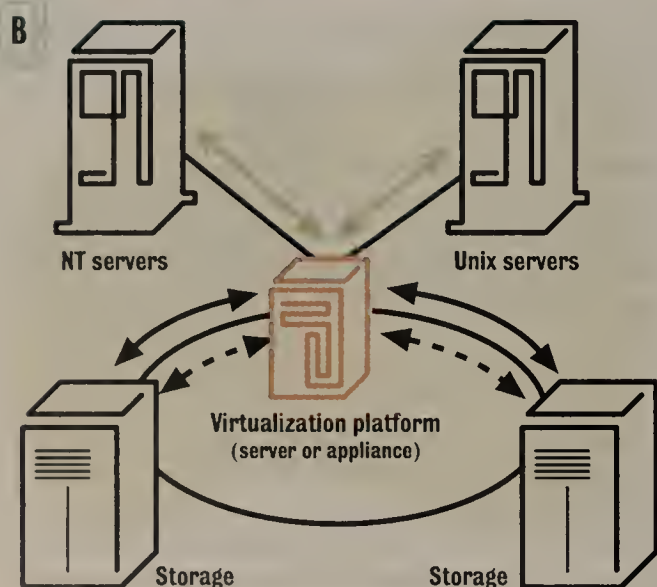
"On top of it you will have all sorts of services that are woven into the virtualization tool set — mirroring, capacity on demand, snapshot backup, data replication," Gruener says.

"The biggest challenge right now is that virtualization as a whole isn't necessarily going to be a separate feature longer term. It's going to be a component of a larger management package," he adds. ■

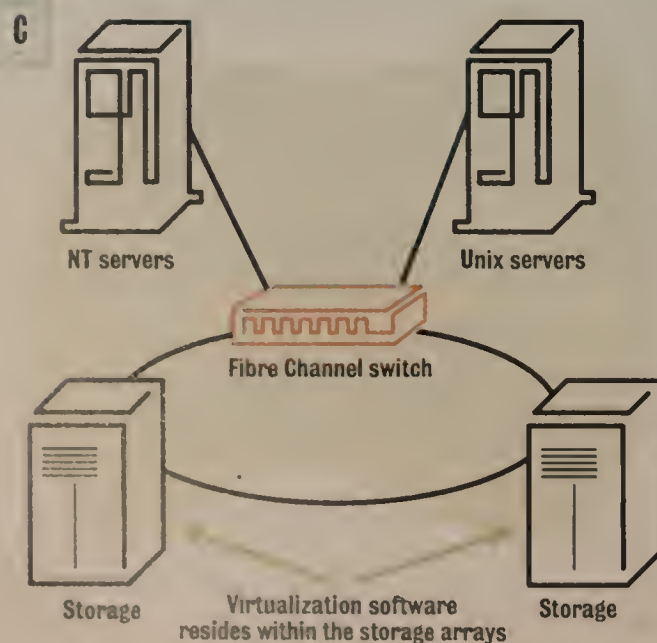
Server-based virtualization



Network-based virtualization



Array-based virtualization



Types of storage virtualization

There are several ways to implement a virtualized storage environment. Here are the three most common:

Type of virtualization	Pros	Cons
A SERVER	<ul style="list-style-type: none"> • Separate device; does not burden other network devices. • More fully functioned version of software. • Independent of storage devices. 	<ul style="list-style-type: none"> • Dependent on operating system. • Increased overhead on server. • All servers must implement. • Access to storage array is more limited than array-based systems.
B NETWORK (appliance/switch)	<ul style="list-style-type: none"> • Gives extra functionality to switch. • Management on same platform. • Lets mainframe Enterprise Systems Connection or other forms of storage be added. • Allows aggregation over MANs/WANs. 	<ul style="list-style-type: none"> • Appliance CPU and memory latency. • Limited by appliance reliance on server platform. • Appliance downtime could result in failure of virtualization and access to storage. • Access to storage array is more limited than array-based systems.
C STORAGE ARRAY	<ul style="list-style-type: none"> • Eliminates extra device. • Adds functionality to array. • Independent of operating system. • Intelligence in device being virtualized allows extra functionality. 	<ul style="list-style-type: none"> • Requires that all users have access to storage array. • Management services are vendor-specific.



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Plunging into virtualization

BY DENI CONNOR

Bill Manning knew he had a problem keeping up with the storage demands of his network. Manning, associate director of technical services for the Plumbers & Pipefitters National Pension Fund, wanted to expand storage without facing the challenges associated with traditional RAID migrations. He accomplished that by rolling out virtualization software from DataCore that groups all of his storage into a common pool that can be managed from a single console.

Manning administers more than 1.5 terabytes of employment, retirement, pension, financial and eligibility data for 250,000 members of the \$4.5 billion fund in Alexandria, Va. The organization's storage needs have quadrupled during the past four years because of a conversion of paper documents to digital images. Each time Manning expanded his storage, he had to do it with identically sized disk drives. If he had 9G-byte drives installed, he'd have to find 9G-byte drives even though the industry had moved on to 18G-, 36G- and 72G-byte drives.

"Every 15 to 18 months I was going to be rebuilding RAID arrays, which was an expensive and time-consuming process that caused downtime," Manning says. "As the volumes of data become larger, the time to restore them from tape will get proportionately longer. At some time we would be faced with having the company down for four to five days."

He anticipated even greater storage manageability headaches when the fund began moving more paper files to digital format. What's more, two of his Windows NT servers were running out of space,

while two other servers only utilized 50% of their disk space.

Realizing he could save more than \$300,000 by not having to rebuild the two overcrowded RAID arrays, Manning put a stop to buying RAID in a willy-nilly fashion. About a year and a half ago, he implemented a storage-area network (SAN) using Gadzoox Capellix Fibre Channel switches and DataCore SANsymphony virtualization software.

The rollout cost \$500,000, but saves time and trouble whenever IT needs to expand storage. "I can buy whatever disk is available and reconfigure the array on the SAN without taking the network down," he says.

Manning uses SANsymphony to dynamically allocate the pool of storage wherever it's needed. He monitors and administers the virtualization process from a single Web-based console, greatly reducing the complexity of managing his network. This also allows his staff to spend more time addressing other problems.

Installed on industry-standard Intel servers called Storage Domain Servers, SANsymphony supports Windows NT/2000, Unix, NetWare, Macintosh and Linux operating systems. The fund has two mirrored Storage Domain Servers for fault-tolerance. If one fails, the other takes over.

IT also has set thresholds that warn staff when data capacity reaches 60% utilization. When a threshold is exceeded, SANsymphony sends an e-mail warning or pager message to IT workers so

they can plan and budget for more disk drives. "By virtualizing the storage space, I can better plan now how storage will affect my budget operations because I can see how that space is going to be used," Manning says.

When new disks arrive, IT plugs them into the cabinets, and formats and initializes them. The DataCore software recognizes the additional space and queries the administrator on how the space should be apportioned. Manning's group normally adds space over the weekend when it won't disrupt the workflow.

"[SANsymphony] lets us drag and drop storage from one server to another," Manning says. "It makes moving storage really easy."

Assisted by Selenetix, a systems integrator and reseller, Manning set out to deploy a SAN and virtualization software over a weekend. Accustomed to week-long upgrades to the RAID system, Manning was surprised that everything went as smoothly as it did. Users see data no differently than before.

Next up on Manning's to-do list are to increase fault-tolerance on the SAN and integrate two Solaris servers that are used for management and fund-tracking applications. These servers will add as much as 600G bytes of data to the SAN.

Plumbers & Pipefitters Pension Fund is also taking advantage of SANsymphony's snapshot back-up capability. "We are moving to a disk-to-disk backup, in which we use snapshots to back up to another disk in real time and then to tape from the second copy," Manning says. "The integration of features such as mirroring and [snapshot backup] are extremely important to us." ■

Bill Manning, associate director of technical services for the Plumbers & Pipefitters National Pension Fund, rolled out virtualization software that groups all of his storage into a common pool.

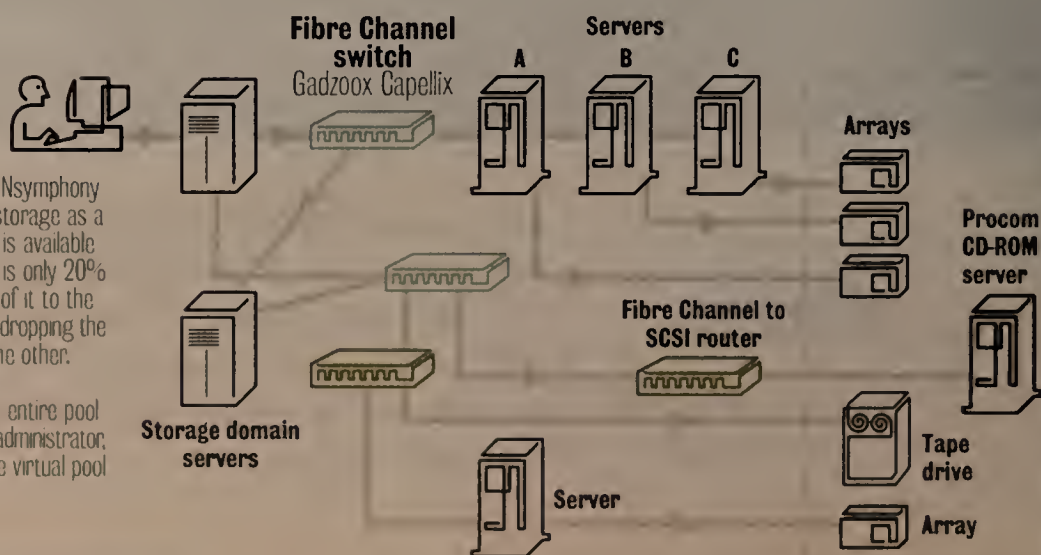
Adding storage on the fly

The Plumbers & Pipefitters National Pension Fund's DataCore SANsymphony virtualization software lets IT dynamically allocate storage where needed.

SANsymphony sends an alert to an administrator to warn him that the disk space allocated to the e-mail server is 60% full.

The administrator uses the SANsymphony management console to view storage as a virtual pool. Seeing that there is available storage on another array that is only 20% utilized, he allocates a portion of it to the e-mail server by dragging and dropping the capacity from one server to the other.

When storage capacity for the entire pool reaches a threshold set by the administrator, IT can add another array to the virtual pool and use it as desired.



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The dot-zero syndrome

I have a hunch that dot-zero product releases cost enterprise customers quite a bundle. Veteran network people often avoid them like the plague because they feel the first release for many products is actually the last beta cycle.

We know there's pressure for vendors to ship products before they're fully baked. Competition gnaws at their heels. Sales departments bulge at the seams with orders. Testing cycles are shunted in the quest to get new products into the mar-

ketplace. Whatever the nature of the dot-zero plague, it's costly to buyers.

While there's always hope that fresh products, even those in virgin categories, should work the first time. From my recent experience, the dot-zero syndrome is still a reality that can burn you badly.

Recently, fellow tester Tim Ritchey and I took a look at three of the first 802.11a wireless LAN access points from SMC Networks, Proxim and Intel. Because wireless LAN products in the 802.11b and HomeRF categories have been out for several years, and the 802.11a products would be similar in many ways, we believed that this seemingly iterative advance in wireless LAN would be comparatively easy to test. Not so.

The SMC access point arrived with engineering software. We didn't know it was engineering software at the time it arrived and didn't question it because the firmware version running on the product was the same 1.0 version posted on SMC's Web site. So we went ahead and attempted to use the SMC access point to prototype our test bed.

We wanted to use FTP as a performance metric because it's readily available. We tested the SMC access point for several hours and were unable to get results within an acceptable delta or standard deviation. Finally, we abandoned peer-to-peer FTP testing with an access point in the middle, deferring to a wire-connected FTP server in the lab. This produced repeatable results finally, after a lot of time wasted because of dot-zero syndrome.

We then moved on to Proxim's 802.11a Harmony product. Proxim's claims to fame are its security and that it has a mature 802.11b product. We were lulled again. Proxim's 802.11a product has a proprietary "turbo" mode that the vendor says is twice as fast as the 802.11a specification. We wanted to see that speed but couldn't reproduce the claim no matter what. Proxim later told us that our results were indeed good and that the product was actually slow. The company informed us that updated drivers solving the problem would be posted soon. That posting must comprise the company's final, final release of its dot-zero product.

This left Intel's Pro/Wireless 5000 access point and notebook adapter products to be tested. To Intel's credit, the Pro/Wireless 5000 worked the first time we powered it up and continued to meet our expectations. It wasn't the speed king, and it didn't have the most fabulous security and management characteristics. But — and here's the point I want to stress — it worked, as a shipping product should.

Intel has had its share of highly publicized new product gaffes. Many of Intel's early 802.11b access points were recalled. But part of improving product quality is learning from your mistakes.

Henderson is principal researcher for ExtremeLabs. He can be reached at thenderson@compuserve.com.

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Arranged marriage

Maintaining a happy relationship with your outsourcer.



ILLUSTRATION LAURENT CILLUFFO

■ BY DREW ROBB

Done right, outsourcing saves money while improving productivity. But like a marriage, the vendor/client relationship results in heartbreak as often as it brings happiness. Despite the inherent difficulties, Gartner reports that romance is in the air. The North American outsourcing market grew 8% in 2001 to \$101.3 billion, and could reach \$160 billion by 2005. If you're planning to tie the knot with a service provider, here are a few things to consider:

Making the right match

The first step is deciding if you want to outsource and how much of your network to hand over. "You can get an in-house developer to take care of things right away," says Sandy Gettings, CIO for CaraVita Senior Care Management in Atlanta. "With outsourcing you have the delay of going through proposals and projects." Despite this shortcoming, Gettings outsources Web hosting, application hosting and software development, citing the advantage of instant expertise. Recently he contracted with Interliant to host the company's proprietary CaraSyst Web application. This provides caregivers with wireless handheld access to residents' medical and personal information.

Before jumping into such a relationship it's vital to check credentials. Does the outsourcer have experience in your field, does it meet its targets and can it guarantee its work?

Gettings also suggests investigating the skills and experience of those techies who will be doing the work, not just those who close the contract.

The prenuptial agreement

After selecting a vendor, it's time to hammer out the details of the relationship. This can be tricky, though, as technology may change during contract negotiations,

never mind over the course of a five- or 10-year service term. Contracts must be flexible enough to accommodate technology advancements as well as dropping prices,

while being specific enough that both parties are agreeing to the same thing.

"With each new contract we try to gain a clearer understanding of the terms of engagement," says Bill Seixas, program manager for the Jet Propulsion Laboratory's Enterprise Infrastructure Office in Pasadena, Calif. Otherwise, he notes, "There is always a question of what was included in the purchase of the product and what was extra support."

Important items to sort out, beyond the basic terms and cost, include who will do the work; project timeline; how progress and results will be measured and reported; the communication procedures to be followed; and any service-level agreements. Also include a non-disclosure/non-competition clause to comply with local laws. The last thing you need is someone coming in, learning how your company operates and using that expertise to help a competitor.

Making the relationship work

With basic agreements in place, there's still the ongoing struggle to make the arrangement work. Whatever procedures one uses to achieve this, it boils down to maintaining high-level communication between parties and seamlessly integrating the outsourced activities with the in-house ones.

Anthony Cappiello, operating systems manager for Barnes & Noble in Westbury, N.Y., brought in consultants from Computer Associates to implement the Advanced

Help Desk and other modules of the Unicenter TNG network management system.

"We acquired a massive amount of technology and needed staff immediately with the necessary skill sets," he says.

Cappiello believes in treating contractors the same as if they were regular employees, including even inviting them to company holiday parties. A CA consultant sits near Cappiello's office along with the rest of the staff and the two meet regularly, in addition to coordinating everything via e-mail.

Larger projects require more formalized procedures, such as regular reports or quarterly meetings with consultants. "It's best to treat a consultant as an additional member of the staff," Cappiello says. "That's the advantage of a long-term service contract."

Saying goodbye

No matter how good the relationship is, projects and service agreements all come to an end some day. This requires an exit strategy.

If you're not satisfied with the service you're getting from an application service provider, for example, how do you get your data back and what responsibility does the ASP have for seeing operations smoothly transferred to another provider? Whether the parting is amicable or animus, the terms should be laid out in the initial contract.

With deployment teams, the task is to ensure the consultants transfer information and skill sets over to the employees who will be taking over.

"While the outsourcing person is here, there is an enormous amount of knowledge transfer going on from him to the regular employees who will be responsible for it after he leaves," Cappiello says. "Capturing that knowledge in-house is very important."

Robb is a freelance writer in Los Angeles specializing in technology issues. He can be reached at drobb@attila.com.

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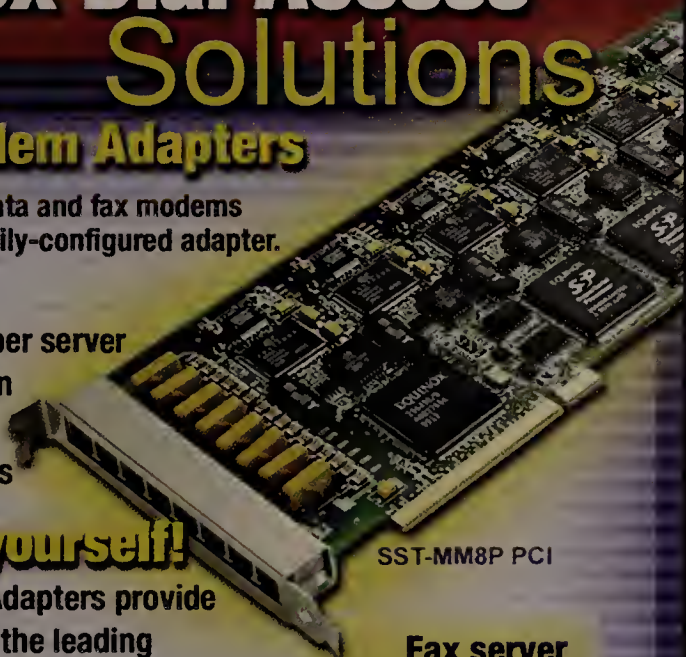


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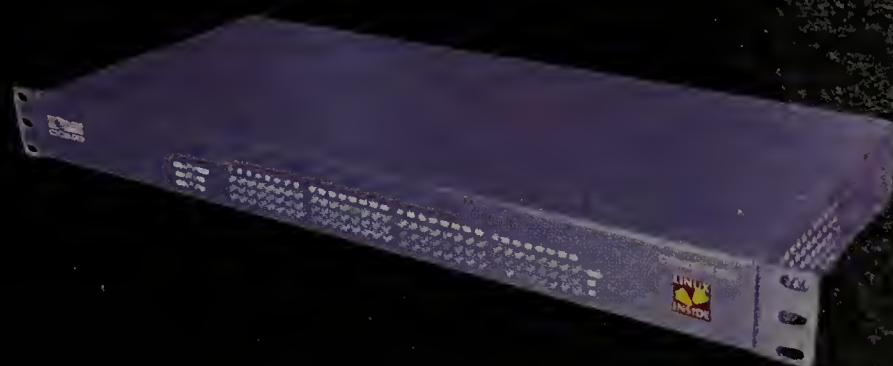
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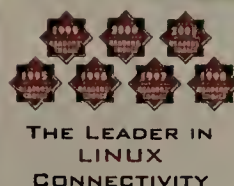
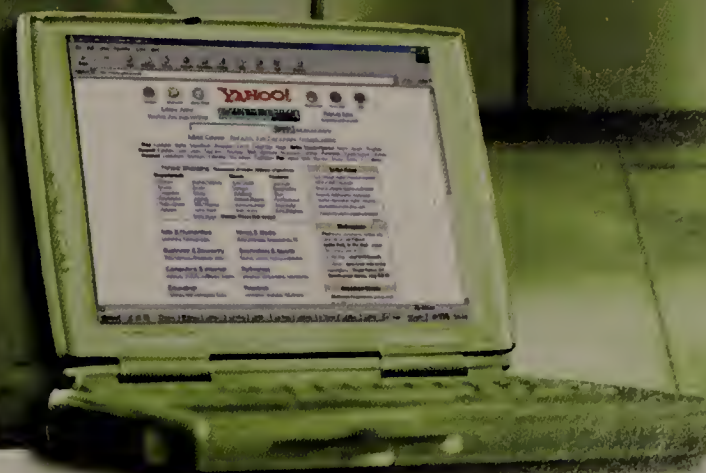
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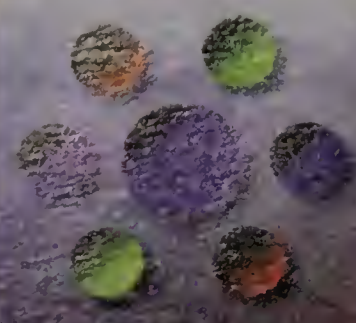


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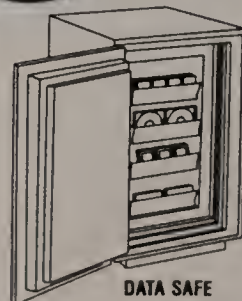
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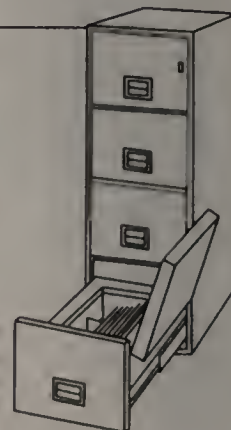
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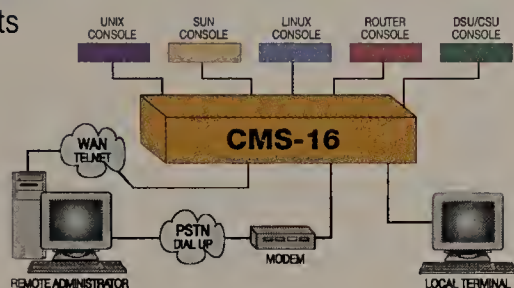
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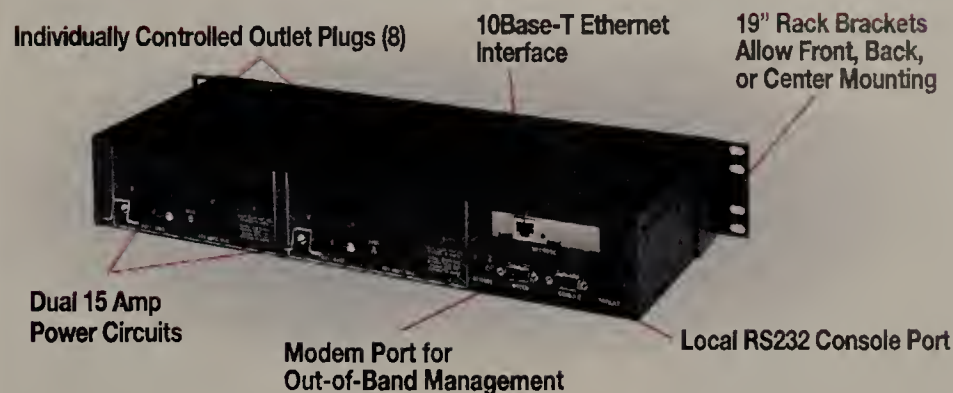


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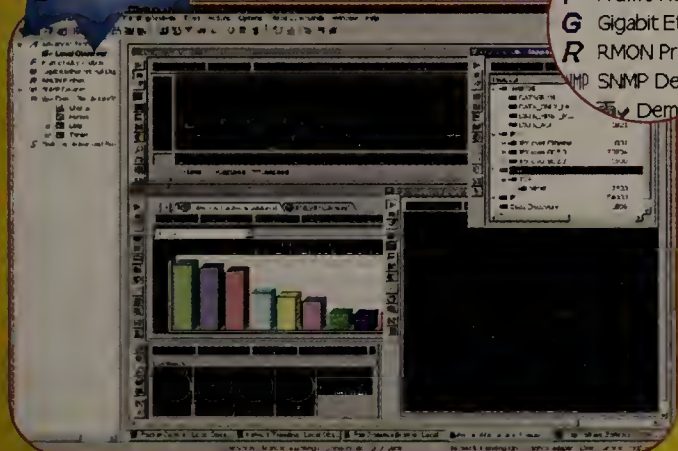
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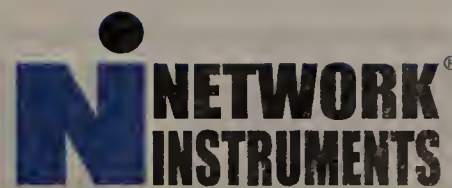
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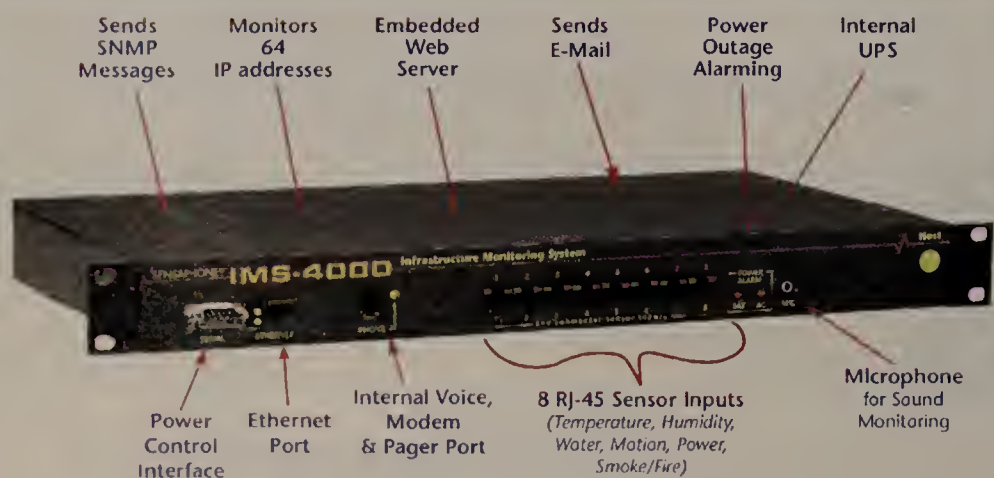
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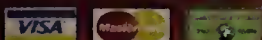
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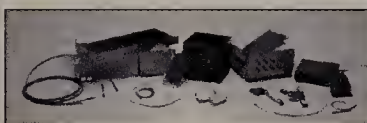
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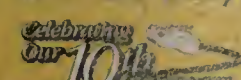


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Senior Implementation Architect sought by company in Englewood, CO specializing in software development, sales & services to work in Englewood & other unanticipated job sites in the US. At a senior level, design & develop geographic information systems software applications for telecommunications or utility companies. The applications are client/server or web-based & incorporate relational database management systems. The client/server applications run on the Windows NT operating system. Code, test, debug & enhance software applications. Analyze requirements for customization. Complete customization, implementation & integration with customer system. Review system architecture, make appropriate recommendations & complete tuning. Design documentation. Provide customer support as needed, & design solutions to customer problems. Engage in project management as needed. Utilize Oracle, SQL & proprietary languages in designing & developing the GIS applications. Requires Bachelor's or foreign equivalent in computer science, geography or engineering (including civil engineering); 3 yrs. in designing & developing geographic information systems software applications. 8am-5pm, M-F; \$93,833.33/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CQ5012830.

Getty seeks DB Developer for HQ office in Seattle. DESC: Dsgn, dev, & impl. RDBMS & internet/web imaging apps. util. SQL, PL/SQL, VB, & CQM on WinNT o/s. Perform data mining & warehousing to gen. reports & data summaries on website downloads, traffic, transactions, & purchases. Provide Oracle dev. support w/in Oracle Financials & HRIS sys. REOS: BS in Engr, CS, Math, or Physics + 2 yrs. of exp. dsgn. & impl. Oracle RDBMS & Oracle financial & HRIS modules & apps. util. SQL, PL/SQL, & VB on UNIX & WinNT o/s. Prem. sal. + benes. Pls. reply to D. Brown, Job#GI-101, 601 N 34th ST, Seattle, WA 98103.

Software Engineers. Design, develop, test and implement specialized software apps using C, Java, Perl, Visual C++, Pro*C, Oracle and related tools, Shell Script in NT/UNIX. Prevailing wage & benefits. HR, Sumedha Global Computing, Inc., 2356 American River Dr., #D, Sacramento, CA 95825.

Systems Analyst to analyze and develop reports and applications using SQL and Visual Basic; convert FoxPro applications to SQL and Visual Basic applications; maintain SQL data warehouse, FTP, file conversions, uploads, and other applications using Crystal Reports and Pro-Clarity applications; and analyze user requirements, procedures, and problems to automate or improve existing systems and review comp. Sys. capabilities, workflow, and scheduling limitations. Req. M.S. in Comp. Sci. or Engineering or related science. \$45k/yr. 40hrs/wk. Send recent resume to: Kathy Lendow, MMCC, 1407 Union Ave., Suite 200, Memphis, TN 38104. Code TN-JZ

Staff Engineer, Avionics Engineering Group. Manage design & prep. of engineering specs of avionics products & related software (s/w) systems. Analyze & design system interfaces to other A/C computers utilizing standard avionics interfaces: CSDB, ARINC 429, ARINC 708, 1553, ARINC 702, Gamma, ARINC 739, & ARINC 407. Produce product designs and/or eng. data (w/ time & cost constraints) for avionics products (EFIS, CDU) such as s/w & control instruments & displays for the cockpit-man-machine interface; create s/w program design using Ada 83/95, C, Assembly (Power PC 8051) programming, object-oriented design methods, error detection algorithms, & rational rose s/w tools to dev. eng. processes for s/w systems & display instruments; test eng. products & s/w; create low level graphics library for 3DLAB Permedia chip set; assist h/w engineer in debugging h/w; write s/w for 8051 family of micro-controllers; create certification approach for DQ-178B level B/A certification; design board support package for PowerPC micro-processors; & provide in-depth eng. support. Prerequisites: Bach. degree in electrical engineering or related field, plus at least 2yrs of exp. in job offered OR 2 yrs of exp. in design/develop. of avionics software. Competitive salary. Job Location: Duluth, Georgia. Send resume to: Ms. Margie Raimor, ATTN: DOL-MK-1; BarcoView LLC; 3059 Premiere Parkway; Duluth, GA 30097-4905

Software Engineer: Design, develop, test and implement client/server, internet-enabled applications for commercial account analysis and mgt. reporting systems applying object-oriented programming tech. and using C++, MFC, VB, Java, JDBC, HTML/DHTML, ASP, SQL, XML, and CQM/DCQM/ATL. Require MS in Comp. Sci. EE, MIS or in a closely related field (or BS plus 5 yrs. progressive exp.) Competitive Salary; 40 hr/wk; Mon.-Fri., 8:30am-5:00pm. Resume to: HR Dept., Hamilton & Sullivan, Ltd., 55 Westport Pl., Ste. 555, St. Louis, MO 63146 No Call/EQE.

CDI Information Services has multiple openings for computer consultants, programmer/system analysts, software/project engineers. Candidate must have Bachelor's degree. IT experience preferred. Traveling is required for some positions. Please send resumes to River Bank Plaza 740 N. Plankinton Avenue Suite 700, Milwaukee, WI 53203; 1915 Hwy. 52 N., Ste. 222B, Rochester, MN 55901 or 1900 E. Golf Road, Suite L10, Schaumburg, IL 60173. InterOne Marketing is looking for computer programmers/analysts. Applicants must have BS degree with at least one-yr exp. using Oracle Designer/Developer/Applications, Siebel, Unix, SDLC, AS/400, ILE-RPG, Sequel, DB2/400. Send resumes to 880 W. Long Lake, Troy, MI 48098

ABB Network Management in Sugar Land, TX seeks experienced and Alpha-Unix, RANGER SCADA/EMS/DMS, CISCO and SCCS skills. Resumes to H.R. Mgr. AJT/mas 1601 Industrial Blvd., Sugar Land, TX 77478 or on-line to resumes@abbnm.com



INFORMATION TECHNOLOGY OPPORTUNITIES

The Gillette Company is the world leader in more than a dozen consumer product categories. Global World Class operations are increasingly dependent on Information Technology. Exciting opportunities exist in global business process integration initiatives. We are currently seeking the following highly qualified professionals to join the Gillette IT team in the Boston area.

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1 (SAP) Staff Basis Administrators/Con-figuration-Integration Specialists/ Application Developers

1 Data Warehouse Architects/ Developers/Database Administrators

1 Telecommunications Analysts

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Please email resume to: www.Gillette.Com.

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F/T Project Implementation Specialist. Responsible for working with the customer to analyze and document data processing requirements and implement data programming for processing those requirements. Configures and installs applications using C/C++, COBOL, UNIX and Windows. Work background must have included exp. with the US telephone billing/mediation industry. Must have a Bachelor's degree in Computer Engineering or foreign degree equivalent. Must have two year exp. Salary: Competitive. Send resume to: J. Laudenschlager, Intec Telecom Systems, 5775 Peachtree Dunwoody Rd., Bldg. G, 3rd Fl., Atlanta, GA 30342.

PROGRAMMER ANALYST needed by IT Co., in Lawrenceville, NJ. Will dsgn, d/vp, test & implmt commercial applics using Oracle 8.0 & 7.x & tools under UNIX, SQLARIS, VMS Windows. Will also engage in d/base admin. BS deg & 3yr exp. Send resume to HR Mgr by fax: (609)912-0605.

Systems Analyst: Design, develop & prog. software for integrated banking systems inc. teller use loans, checking & savings acct., tellers of credit invt. Funds, based on needs if Latin America Banks & Financial Inst. Works w/IBM platform w/AS 400 system, Devp. banking prog. to interface w/the int. 40 hrs per wk, 9A-5P, 3 yrs exp. in job offered. Fax resume to (305) 377-3282.

PROGRAMMER-ANALYST sought by NE OH Chemical Co to plan/develop/test computer programs; upgrade system; formulate plan outlining steps required to develop program; analyze/review program to increase operating efficiency; resolve end user issues; develop/report user requirements to management; train users and implement new methods; configure system to suit business process; enhancement through workflow, IDQC. Interface with external systems; data warehouse and business warehouse management; ITS configuration and APO implementation. Min req. Bachelor's Degree in Mech. Eng or equiv. and 2 yrs. in job or job related exp to include use of SAP ABAP, C, C++, Visual Basic, Java, and Oracle. Travel req. Resumes to Degussa Construction Chemicals, Inc., 23700 Chagrin Blvd., Cleveland, OH 44122. No calls. EOE.

Consulting comp. req. Soft. Engg. w/MS deg. or its equivl. & 1yr exp. interfacing w/hrdwre/ software, using below mentioned skills & Prog. Analyst w/BS and 18 mos. exp. w/the foll. or its equivl; Dev. 2000, Des. 2000, Oracle, SQL, AS/400, Unix, Java, Cold Fusion, Sun Solaris, HTML. Send res., Equivl. is based on Edu. & Exp. Eval. Send res. Attn: Recruiter, Antrix Corporation, 879 Rte. 130 North, Hightstown, NJ 08520.

Computer Programmer. 8a-5p. 40 hrs/wk. Dsgn & implmt web based applics for law firm's legal research & case mgmt, drafting, databasing & networking using Java, JavaScript, C, C++, VB 5.0/6.0, HTML, d/bases prgm SQL, SQL Plus, PL SQL on Unix, Sun Solaris, Win 95/NT OS. Masters or equiv in Comp Sci or Engg req'd. Resume to: Uday V. Singh, PC, 2282 Birdie Lane, Duluth, GA 30096.

TECHNICAL PRE-SALES ENGINEER-Wanted by Software Development Company. Requirements include Bachelor's Degree in Computer Science or related field or equivalent with 2 yrs of experience. Please respond to Robyn Bello, HR Representative, IQNA Technologies, 200 West Street, Waltham, MA 02451.

Programmer/Analyst wanted by investment mgmt co in NYC to analyze, design, prgm and maint finc'l mgmt & statistical research applications for on-line web-based system. Unix, Intersystems Cache DB, CGI, C/C++. Resumes to Paradigm Global Advisors, 12 E. 49th St., NY, NY 10017.

Systems Analyst (Denver, CO.) BS Computer Information Systems or equiv. Analyze user requirements, procedures & problems. Plans, tracks & prepares tech. reports, memos and inst. manuals. Program development. Upgrade system & correct errors. Design, develop, code, test, implement, maintain & document computer system including troubleshooting. Clarify & write system specifications. Interfacing of applications. Utilize COBOL, HTML, SQL, Java, Visual Basic, & C++. 40 hrs/wk 8 am - 5 pm. Salary \$43,300.00 per/yr. Apply by resume to: CDLE, 2 Park Central, Suite 400, 1515 Arapahoe Street, Denver Colorado 80202-2117, and refer to Job Order Number CQ5013046. No phone calls. Must have proof of legal authority to work.

Several computer related positions available for a large spring water production company. Degree, technical skills & experience vary per position. Send resume to Frank Stinger, Suntory Water Group, Inc., 5660 New Northside Drive, Suite 500, Atlanta, Georgia 30328.

Several computer related positions available for large software development, support and sales company. Degree, technical skills & experience vary per position. Send resume to Jim Pearce, Thru-Put Corporation, 2099 Gateway Place, Suite 240, San Jose, CA 95110.

Software Engineers (SE) needed in Dallas, Texas area for research, design, & development of software programs for the following requirements: Programming with 3 years of Visual Basic, SOL Server and client scripting tools. All positions require a Bachelor's in Comp. Sci., Comp. Eng. or MIS, or related field and 3 yrs in job or related exp. Send resume to RiverRock Systems, P.O. Box 990 Addison, Texas 75001-0990, refer to Code: SE-LL.

Systems Analyst with business applications experience in ERP environments for Sr. Consultant position in Independence, OH. Travel required. Send resume to HR Administrator EM/ks, SAIC, 5001 Rockside Rd., Crown Centre II, #700, Independence, OH 44131.

Senior Oracle Applications Consultant - Customize, implement, test, and support Oracle Applications, focus on Oracle Manufacturing. Other modules include Supply Chain and Financial. Duties include business process mapping, requirement analysis, module setup, interface analysis, design of interfaces between Oracle Applications and other systems, data conversion analysis, design of high-level specifications, and provide technical support to junior programmers. Use Oracle Developer, Oracle database, PL/SQL, SOL, SOL Navigator, Reports, and SOL*Plus. Degree and exp. req'd. Send resume to President, Cambio Consulting, Inc., 2187 Newcastle Ave., Suite 101, Cardiff, CA 92007.

Senior Optical Coating Engineer. Lead the engineering team for optical thin film filter production. Responsibilities include design, deposition, optical fabrication, optical testing and new product development. MS (PhD preferred) in physics, optic or EE plus 3 years related exp. in optical thin film coating is req. Respond to: Super Light Wave Corp., Attn: HR Dept, 2077 N. Capital Ave, San Jose, CA 95132 or fax resume to (408) 941-8353. EQE

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MANAGER (Technical) wanted by Edison, NJ based Co. for job locations throughout the US. Must have Master's degree in Comp. Sc., Engg., Mgmt., Bus. Admn. and proficiency in ERP (e.g. Oracle Apps., BAAN, SAP) and 4 yrs. of exp. in Comp. S/W developing and/or consulting in ERP type projects. Respond to: Savant Consulting Group, Inc., 505 Thornall Street, Ste. 205, Edison, NJ 08837. Ref.: 8018RG.

PROGRAMMER ANALYST needed by IT Co., in Lawrenceville, NJ. Will design, develop, test & implement commercial applications using Oracle 8.0 & 7.x & tools under UNIX, SOLARIS, VMS Windows. Will use Forms 4.5, Forms 3.0, reports 2.5 & report writer Pro C prgmg. 3yr exp & BS deg reqd. Send resume to HR Mgr by fax: (609)912-0605.

Applications Developer with experience in solutions for international commerce logistics, using Oracle RDBMS, Oracle Developer, PL/SQL, Java, HTML, XML. Attn: K. Smallwood, ClearCross, Inc., 11911 Freedom Drive, Reston, VA 20190. Resumes to: Ksmallwood@clearcross.com. No Phone Calls.

SOFTWARE ENG I Formulate/design complex operating software program apps specs, modify/maintain complex existing apps, design/code/test/implement programs. B.Sc. Computer Sci, Business, Economics, related field or equiv. req'd. Must be proficient in Visual Basic, ASP, Config. Mgmt & Accurate Devel. & Support. \$45,595/yr. 40 hrs/wk, OT as need. Send resume to: C. James, John H. Harland Co, 2939 Miller Rd, Decatur, GA 30035.

Software Engineer: Research, design, and develop software systems and applications using IBM 3090, MVS, IMS DB/DC, COBOL II, CICS, JCL, Endeavor, Panvalet, InterTest, Smart Test, Viasoft, and Xpedit. Perform functional and business requirement analysis. Customize/enhance/configure/integrate software systems and coordinate installation. Develop and direct software system testing procedures and perform unit and integration testing. Provide production support. Must have a Master's degree or equivalent in Comp. Science or Engineering. Will consider candidates with BS and five years experience in lieu of master's degree. Job in Charleston, WV and other locations. Multiple positions. \$60,000-70,000/year. Send resume to HR, U.S. Professionals, LLC, 518 Roxalana Hills Dr., Dunbar, WV 25064. Fax (304) 768 4047. E-mail: jobs@uspccorp.com

PAREXEL International currently has positions available at our 900 Chelmsford Street, Lowell, MA office:

Senior Manager E-Services: Requires Bachelor's or equiv in CS, Scientific Engineering field, or related plus 3 yrs exp in clinical software development, including 1 yr in statistical analysis and modeling and 1 yr with expanded access clinical programs (exp can be gained concurrently). Must also have knowledge of US and European drug regulations.

Programmer/Analyst: Requires Bachelor's or equiv in CS, Engineering, Math, or related field plus 2 yrs exp in computer field, at least 1 year of which using SQL Server, Oracle, & Lotus Notes.

Oracle Database Administrator: Requires Master's or equiv in Systems Engineering, CS or related field plus 5 yrs exp in database programming using Oracle in an NT environment and associated networking hardware. Please respond to hr@parexel.com or Attn HR, PAREXEL International Corp., 195 West Street, Waltham, MA 02154. EOE.

Programming Manager needed for Oveido Engineering, Medical and Telecommunications co. to convert scientific, engineering and other technical problems to format processable by a computer. Min req Bach. Degree in Industrial Technology or Industrial and Systems Engineering plus 4 yrs exp. Send resumes to Alicia Diagnostics, Inc. 1274 Alafaya Trail Oveido, FL 32765.

TECHNICAL ACCOUNT MANAGER-Wanted by Software Development Company. Requirements include Bachelor's Degree in Computer Science or related field or equivalent with 4 yrs of experience. Travel may be required. Please respond to Robyn Bello, HR Representative, IONA Technologies, 200 West Street, Waltham, MA 02451.

Programmer Analyst needed to analyze, design, develop & test the software applications with experience in Borland C/C++, Visual C++, C++ Class Libraries, MS SQL Server, ASP, Visual Basic, Java, ActiveX, HTML & Rationale SOA Suite is necessary. Send resumes to: Ektron, Inc. 5 Northern Blvd #6, Amherst, NH - 03031.

SYNAPSE GROUP, INC., a leading computerized magazine marketing company, is looking to hire qualified candidates for the following positions:

BUSINESS ANALYST to research potential markets, analyze statistical data to forecast future marketing trends, initiate and produce timely and accurate reports and analysis to improve business results, and develop and maintain sales and account management reporting systems. Qualified applicants are required to possess at least a Bachelors degree in Business, Finance or related discipline. Strong PC skills and good financial/accounting background preferred.

SYSTEMS QUALITY ASSURANCE (QA) ANALYST to document and perform internet application testing to insure the quality of code and functionality. Build test scripts and processes, upgrade system and correct errors to maintain system after testing. Qualified applicants are required to possess at least a Bachelors degree in Computer Science, Information Systems, Engineering or it's equivalent plus two years of QA experience. Extensive knowledge and experience in internet technologies, HTML, ASP, NT, Loadrunner and Webload preferred.

PROGRAMMER ANALYST to plan, develop, test, document and update computer programs to increase operating efficiency. Enter program codes into computer systems, evaluate user requirements, monitor performance and provide technical assistance to program users. Qualified applicants are required to possess at least a Bachelors degree in Computer Science or it's equivalent. Sound knowledge in internet applications, HTML, SOL, ASP and ORACLE preferred.

PRODUCTION ENGINEER to test, maintain and modify various software systems. Build test scripts and processes, implement databases, design database schemes and enforce data integrity and security. Write structured PL/SQL code and shell scripts to improve the productivity of administrators/system users. Optimize UNIX server and network performance using UNIX tools, and monitor performance and provide technical assistance on all IS related issues. Qualified applicants are required to possess at least a Bachelors degree in Computer Information Systems, or it's equivalent. Sound knowledge in SOL, Oracle, Visual Basic, HTML, C++, JAVA, Database and System Analysis design, and statistical packages preferred.

SENIOR PROGRAMMER ANALYST to plan, develop, test, document and update computer programs, provide counseling on the selection of database administration tools for all Oracle databases within the company, and setup, maintain, support and upgrade all Oracle Databases and Applications. Qualified applicants are required to possess at least a Bachelors degree in Computer Science or it's equivalent plus two years of relevant experience. Strong background/expertise in Oracle, Unix, SOL, PL/SQL, Pro*C, C, HTML, database administration and web development desired.

The company offers a competitive compensation/benefit package and an environment where achievements are recognized & professional growth is encouraged. Qualified applicants are encouraged to mail resumes to: HR Department, Synapse Group, Inc., Four High Ridge Park, Stamford, CT 06905.

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At **NCCI Holdings Inc.**, we understand that it's our 800 dedicated team members that have solidified our position as the leader in the Workers' Compensation data collection and analysis industry. That's why we've invested in a state-of-the-art headquarters and developed innovative employee/family-friendly programs and practices. Happy people produce high quality results—it's a sound business philosophy.



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IT PROFESSIONALS/MANAGERS NEEDED

Data Conversion, Inc., a leading IT consulting firm, has job opportunities for IT professionals (Software Engineers, Programmer/Analysts, Systems Analysts, etc.) and business development professionals/managers. Technical positions require experience with Java, HTML, Oracle, C++, COBOL, JavaScript, etc. Business development professionals/managers should have IT marketing experience and technical background for managing the implementation of ERP Products, Supply Chain/Customer Relationship Management Products, and Wireless and Embedded Technology Products. Positions require relocation to anticipate job sites throughout the United States. Qualified candidates send resumes to: Radha Ravi, Director, Human Resources Development, DCI, Inc., 238 Main Street, Cambridge, MA 02142.

Sr. Systems Analyst: Design, analyze, develop, test, implement and maintain client/server projects on WINDOWS NT DCOM. Develop software applications using Microsoft Visual C++ 6.0, Visual Basic 6.0, Crystal Report Designer 8.0 and HTML. Work w/OLAP for multi-tier applications using ATL/DCOM. Supervise programmer/analysts & IT personnel during application installation, implementation & maintenance. Req. M Sc. or its foreign degree equivalent in CS or other closely related field + 2-yr exp. in job described. Resume to: Bob Stevenson, Staffing Manager. Ref. Job # SAF-220, Enterprises Computing Services, Inc., 8744 Main St., Ste. 101, Woodstock, GA 30188

"SYSTEMS ANALYST: Responsible for systems development & production support. Work experience in the following Information Technologies: Mainframe Based Applications, Altamira Banking Software, CICS, MVS, TSO, ISPF, DB2, PACE, COBOL, RPG400, SAFE, JCL, VSAM organization, analysis, design & structured programming methodology. All modules of Abanks front desk System and SIMM Information Banking system. Experience redesigning & programming General Ledger applications from Mainframe to AS/400 using Cobol400 and RPG400. Ability to work on all phases of application development from gathering & analyzing user requests up to deploy in production. Min. 4 yrs exp. in job offered. Competitive salary, F/T, Mon-Fri (may require evening & weekends), must be willing to travel & relocated as necessary, position available in Ft. Lauderdale, FL. Monica de los Riosat Softtek: 2900 University Drive, Coral Springs, FL 33065"

Senior Software Engineer Concepts ETI, Inc. (dba Concepts NREC) seeks a Senior Software Engineer in our Wilder/White River Jct, Vermont location. Develop and maintain design and analysis software for turbo-machinery. Position involves supervision and leading coding projects, creating software dev't plans, program specs, and code design. Involves use of C++, FORTRAN, Windows, MFC, OLE, and office software (wp/ss/db). A qualified applicant will hold an M.Sc. in Computer Science, Engineering or related field and at least 3 yrs of relevant exp. Applicants send resume to Concepts NREC, 217 Billings Farm Rd, White River Jct., VT 05001.

Senior Oracle DBA/Systems Architect. Jersey City. Bachelor Degree or equivalent in Computer Science or related. 2 yrs. exp. as follows: Languages: SQLPlus, PL/SQL, SOL Forms (4.5, 3.0, 2.3), SOL Report Writer (2.0), Forms (2.3, 3.0, 4.5), SOLMenu (5.0), PL/SQL (2.0), Tools: Oracle Backup Enterprise Utility, Oracle SOL Backtrack, Chain Link Object Migrator (2.0), Sybase, OLAP technology, Unix Shell Scripting, Cron processes, SOL Scripting, C, csh, ksh, PERL scripting, ProC, Visual Basic. Operating Systems: MS-DOS, UNIX SVR 4.0, HP-UX 10.2, Solaris 2.5.1, Solaris 2.6, Solaris 2.7, Solaris 2.8, ows NT, Mac OS, Digital Unix 4.0b, HP9000, AS400, Digital, AIX Client Server, Alpha, Red Hat Linux. 40 hrs. per week, 9 a.m. through 5 p.m. Monday through Friday. Send resume Attn: StratPro Limited, Job #15, One Exchange Place, Suite 1000, Jersey City, N.J. 07302.

Supervisor - IT Dvlpmnt: Direct & coord applic dvlpmnt, rev & anal w/in IT dept. Consult w/mgmt re: info & applic reqmts of Co. Consult w/dept heads to define nature of projects. Supv activities of IT dvlpmnt personnel; incl qlty assur, personnel decisions (hire, fire, promot, perf evals, etc), & controlling expenses w/in unit. Direct training of IT employees. Supv & perform comp applic anal, prgmg & implmntn in Oracle envrmt. Prep progress reports to inform mgmt of project status & dev from goals. Req MS in comp sci, engg or related field + 3 yrs progressive exp or BS in comp sci, engg or related field + 6 yrs of progressive exp. Req'd yrs of exp must be in Oracle dvlpmnt envrmt w/min 2 yrs exp in ORACLE Apps. 10.x, PL/SQL, & implmntn/support of ORACLE ERP. \$77,064. Resumes to: Char-Broil Div./W.C. Bradley Co., Attn: V.P. HR, PO Box 1240, Columbus, GA 31904-1240.

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SAP

Cap Gemini Ernst & Young U.S. LLC is currently seeking individuals to fill Consultant and Manager positions in multiple locations nationwide and in California including the Orange/LA counties area and the San Francisco Bay area. To apply, please select Careers/Job Search at www.us.cgey.com and then Doorway to Opportunity. Use password 50724 for Manager or 50725 for Consultant.

Fitiri Inc is looking for Tibco Programmers with knowledge in live market data, full range of emerging market analytics, historical data archiving & retrieval for Trading, Sales, Research, Capital Mkts, & Risk Mgmt. You will be responsible for designing, developing, testing, implementing, and supporting middleware messaging components used as primary interfaces between network applications. Candidates must have a BS degree in CS, MIS or Eng, along with 1 year experience in Tibco Rendezvous, ADB, Adapter SDK, Hawk, MB, IM and Java. e-mail your resume to resume@fitiri.com

Technical Support Specialist, Atlanta: Chain of retail stores. Convert & improve comp. systems; review, modify & test programs; provide tech support to resolve problems; train end users. Requi: Bachelors (or foreign degree equiv. or equiv. in education or experience or any combination of both) in Comp.Science or Info.Systems or Science or related, + 2 yrs. exp.in job or 2 yrs as Computer Programmer. Send resume to HR, Mayuuri Corporation, 2452 Gresham Rd, Atlanta, GA 30316.

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IT Careers in Biotechnology



In the world of biological research and pharmaceutical development, the keys to major discovery are in the data. The challenge is in determining what data links to which research, where seemingly unrelated studies

may provide a clue and how to eliminate dead ends as soon as you can. In other words, biotechnology rests in large part on the information technology that works the data for microbiologists.

Michael Wyrick, director of IT Consulting Services for **KMI**, a division of **PAREXEL International LLC (KMI)**, said the industry is relying on computer systems to move drugs to market more quickly. "Through technology, companies are able to handle more compounds and eliminate potential compound failures faster," Wyrick said. "There is only so much research dollars funded to follow developing compounds, so it's important to eliminate non-working solutions fast."

To assist its customers, **KMI** hires IT professionals with computer skills (network, desktop computing, database management, software development, platform qualification and computer validation) and FDA-regulatory experience. "However, some candidates that have the right skill set but who lack the knowledge about FDA regulations can be trained to understand how their current skill sets can be used in an FDA-regulated environment," Wyrick said.

InforMax is a veteran in the world of bioinformatics, having served major laboratory research facilities and pharmaceutical companies for 11 years. The goal is to help scientists extract value from the massive databases that have evolved in a few short years. "From cloning to genetic research to molecular medicine, the industry has changed dramatically over the past 36 months," explains Steve Lincoln, executive vice president of product development and chief scientific officer for the Bethesda, MD, company. "Biology traditionally was a qualitative science and most results were based on human interpretation of specific experiments. That has now changed to a quantitative science," he says. "We are discovering new biology by mining enormous and complex databases using sophisticated algorithms and visualization tools. The people working in life sciences must have easy access to data or lose their competitive advantage."

Lincoln stresses that the competition may be monetary, but it's also often a matter of life itself — people use

bioinformatics software to help develop new drugs to treat cancer and other diseases. "We've developed computer software to help cross validate, to reduce the 'noise' in the data stream," he says. "Just as important is developing a user interface that biologists can use and integration tools that can link data that is constantly moving and changing."

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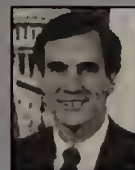
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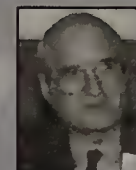
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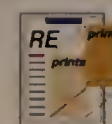
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Lotus

continued from page 1

WebSphere application server, the DB2 database and Tivoli management system to support Web-based distributed applications that can incorporate Domino's collaboration features. The collaboration features will be developed into components that can be inserted into other applications.

IBM wants a data store that can handle high-volume transactions and large-scale Web-based applications, which aren't Domino's strong points.

But customers feel they are hearing two stories.

"The midlevel managers at Lotus are saying that NSF is powerful, but now IBM is saying they are going to gut it," says Nathan Freeman, co-founder of Notes Open Source Software Organization (NotesOSS), which is developing an open-source replacement for Java technology called Garnet that was recently yanked from Domino. Freeman was reacting to public comments by Steve Mills, senior vice president and group executive for IBM's Software Group, who said IBM would "throw away" the aging Domino data store.

"Do these guys know what each other is doing?" Freeman asks. "Are they using their own collaboration software to collaborate?"

Ed Brill, senior manager for messaging and collaboration at Lotus, says the messages may appear mixed but are not.

Garnet

continued from page 8

mino and the benefits of Java 2 Platform Enterprise Edition application development within their familiar Domino environment.

The Notes user community immediately stepped in and has now re-created most of Garnet.

"The only missing piece is a Garnet feature that allowed the use of Formula Language and LotusScript to create JSPs," Greene says.

"I can put LotusScript into JSP with Jasper, but I can't yet make Domino execute it. But the majority of the client-side and all of the server-side features of Garnet have been re-created. People can use JSP with Domino in almost the way Garnet was designed," Greene adds.

The only difference between Greenes work with Jasper and NotesOSS efforts is that Jasper

"NSF, the data store, we are saying that is all in Domino 6," he says. "But we've been talking about the orderly evolution from Domino's monolithic integration to this component-based, federated architecture for Web services."

Lotus General Manager Al Zollar told *Network World* in January that "in the past, we built our own plumbing. We handcrafted it. We hand-mastered it. In the future, we are going to get our plumbing from... WebSphere, DB2 and the Tivoli [Systems] capabilities that

Do these guys know what each other is doing?

Nathan Freeman

Co-founder of Notes Open Source Software Organization

we have inside of IBM."

Some say it won't be easy.

"What IBM is trying to do with DB2 is like heart and liver transplants," says Harry Wong, CEO of Casahl, a Lotus business partner that created Notes SQL, an Open Database Connectivity driver for Notes that Lotus licensed in 1994. "Notes is a highly unconventional data store, and it will take a lot of work to put it on a relational database. That's why a lot of people are nervous when the future is not explained."

Zollar said XML will be key for evolving the data store to DB2,

will not be offered as open source software.

"I originally thought about open source, but I used too much source code from my other Jagre products. So if I opened up Jasper, I'd be opening up all my products."

"It's too bad he is not going to step up to the plate and open source it," says Nathan Freeman, co-founder of NotesOSS. "But I can tell you that some kind of mechanism to manage JSP in Notes databases will eventually be part of Crimson." Freeman says NotesOSS is looking at using a form of Web Distributed Authoring and Versioning (WebDAV), which has check-in and check-out capabilities and is supported in Domino 6, and the capabilities contained in IBM's WebSphere Studio tools.

The question that remains for corporations is if they will use open source tools that don't offer formal support within their criti-

cal Domino environments.

Brill says the data store change is the long-term goal and that Lotus will begin to detail the road map of how to get there at upcoming conferences, including developerWorks Live in May, Lotusphere Europe in June and Lotusphere in January 2003.

But many users are skittish now because of conflicting messages. Lotus and IBM have been sending about product strategy. The DB2 announcement comes after Lotus announced it will eliminate Garnet, a Java Server Pages (JSP) engine, from Domino. Much like the angst spawned by the Garnet decision, the DB2 issue created interest on discussion lists that criticized and analyzed the move. Users say the key questions are about backward compatibility and preserving Domino's rich replication features.

Brill says answers are being worked out but that Lotus will protect customer investments.

"Transparency is the key issue," says Scott Wenzel, a Notes administrator for a federal agency and the creator of several unofficial Lotus Web sites. "For years, Lotus has been working toward making the data structure replaceable, and I think IBM is really finally taking the steps to deliver on it."

Wenzel acknowledges that the Notes data store is an aging technology that has lost its steam. "But they have to make the change transparent to current applications or they will force people to

cal Domino environments.

"Clearly this is of interest, but I'd be surprised to see large enterprises adopt this," Meta's Cain says.

But some say it will be evaluated on an as-needed basis.

"When I need what Garnet would have offered, and the NotesOSS efforts would meet that need, they'll get used," says Scott Wenzel, a Notes administrator for a federal agency. ■



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Open source developers create replacement for Java-based Garnet technology eliminated from Domino 6

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Changing face

The future of Lotus' Domino platform has undergone a series of makeovers in the first three months of this year.

Jan. 28: Lotus announces that Domino's future is a set of collaboration components that run atop Java 2 Platform Enterprise Edition, and can be plugged into business-process applications.

Jan. 29: Lotus confirms the elimination of Garnet, a technology built into Domino 6 for delivering Java Server Pages. Users complain.

March 6: IBM's Steve Mills, senior vice president and group executive for software, says in published interview that DB2 will replace Notes Storage Facility.

upgrade and dump old stuff and there is no way that will happen."

Others say the plumbing under Domino really isn't a concern.

"As long as you keep the true collaboration of Notes, it is not important what it runs on," says Jonathan Spira, chairman of Basex, a consulting firm.

Some have questions about replication. "DB2 has replication, but does it include client-side and is it as sophisticated as Notes," asks Freeman of NotesOSS. "If they have a new replication engine they should tell us."

Lotus isn't alone in making infrastructure changes as vendors scurry to incorporate Web ser-

vices technology, a collection of standards interfaces based on XML, into their platforms. Microsoft is replacing Exchange Server's native data store with the next version of SQL Server technology, code-named Yukon.

As a first step toward DB2, Lotus is including virtual database features in Domino 6 through Lotus Enterprise Integrator Next [LEI-next], which allows DB2 to mimic Domino's NSF. But some are finding the technology still needs work.

"We are testing LEI-next, but right now Notes security does not work with it," says Doug Hayden, IT project manager for furniture maker Herman Miller in Zeeland, Mich. "I can create virtual views, but how will Notes react when 2,000 or so records are returned. The views are kept in Notes and can it handle that?"

While the details of the DB2 conversion are not known, observers say the bigger picture is clearer.

"There is a mandate to take out the aging Domino infrastructure and replace it with IBM infrastructure," says Matt Cain, an analyst with Meta Group. Cain says there is no doubt that customers pursuing a long-term strategy with Domino will end up broadly deploying WebSphere, DB2 and Tivoli in some fashion.

But he says it's obvious "IBM hasn't made all the decisions" about how to consolidate infrastructure.

Lotus' Brill says that certainly is the case, but "we have a lot of smart engineers working on it." ■



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BackSpin Mark Gibbs



Infamous last words

"Either that wallpaper goes, or I do."

— Oscar Wilde on his deathbed, Nov. 30, 1900

Yes indeed, one's final words can be profound ("Friends applaud, the comedy is finished," Ludwig van Beethoven, March 26, 1827), witty ("I should never have switched from scotch to martinis," Humphrey Bogart, Jan. 14, 1957), or poignant ("All my possessions for a moment of time," Elizabeth I, Queen of England, 1603).

But how do you know your words and comments will be reported after you shuffle off this mortal coil?

And if they are reported, will they be reported accurately? How about those choice words for those you hate, those you scorn or those you want to be brutally honest with but would rather not be around to experience the consequences?

And what about those files you would prefer not be found after you pass away — you know, your "entertainment" collection (nudge, nudge).

I have found the answer: Thanks to a note in one of my favorite newsletters called "Need To Know" (www.ntk.net), I stumbled across a piece of software that addresses this problem. The software is called

Dead Man's Switch, or DMS.

DMS (which can be found at <http://daisyman.arsware.org/dms>) was produced by "Daisyman," the pseudonym for one of the contributors to Arsware.org (www.arsware.org).

Let me digress here to s'plain ... this Web site, according to its owner, "hanser," contains "arsware," which, he notes, "is loosely defined as apps, themes, graphics work, code libraries, or anything else written by Arsians." I have no idea what Arsians might be, and frankly couldn't care less unless it qualifies under the heading of original sins. Be that as it may, it is a very cool site.

So DMS is a simple idea: "If not reset by a given time, [DMS] will automatically carry out a series of tasks, such as posting messages to Web sites like Ars, sending e-mails to loved ones (or hated ones), and encrypting or destroying sensitive files."

What a neat idea! The software runs without installation — you save it to a directory and, when you first run it, all the required registry entries are created. DMS keeps all its own files in the same directory as the application and generally keeps everything simple and tidy.

Anyway, I thought the whole idea of DMS was interesting, and it made me wonder what the last words of various public figures in our industry might be ...

Bill Gates: "Yes, I wanted to take over the world, and

I can't believe that we ever got away with those OEM contracts. Oh, and I always thought that Oracle was better than SQLServer. And I wish I'd written Linux."

Larry Ellison: "It was true, Oracle's software was a buggy, overpriced con and MySQL was actually much better."

Walter Hewlett: "I didn't really give a rat's ass about the Compaq deal, I just had time on my hands."

Linus Torvalds: "Actually, I always rather liked Windows."

The idea of this software got me thinking that there are some interesting snafus that could occur using DMS.

Imagine setting up DMS on your PC, and then the machine gets stolen! The thief doesn't know it is running and doesn't care, so DMS doesn't get reset in time. Suddenly you find you have confessed your infidelities to your spouse, sent the Internal Revenue Service a nose-thumbing note about how you lied about your expenses over the last decade, told each of your business colleagues exactly what you think of them and bequeathed your golf clubs, boat and widescreen TV to the nearest homeless shelter.

DMS is an interesting idea and not without certain possibilities, but the risks are far too great for my tastes. I'll stick with an old-fashioned will for now.

Last words to nwcolumn@gibbs.com.



'Net Buzz News, insights, opinions and oddities

Paul McNamara

"Laptops don't kill people ..."

Dell couldn't have picked a pricklier bunch to tick off with slipshod customer service. In fact, on any list of business gaffes best avoided, riling the National Rifle Association has to rate up there with egging on the IRS.

Granted, a slice of the blame for this fiasco must fall on the U.S. government and its often-silly tech-

nology export restrictions, but that wasn't going to help Dell calm the NRA's notoriously militant foot soldiers.

Here's the short version of what happened:

Jack Weigand owns a gunsmith shop in Mountaintop, Pa. His business specializes in the customization of target weapons.

Last month, Weigand decided he needed a laptop and ordered one online from Dell. It never showed up. When Weigand called to ask why, he was told a software-based screening process designed to help Dell comply with export restrictions had halted his order because the name of his company — Weigand Combat Handguns — triggered an alert. The word "combat" raised a red flag, Weigand was told. (You can read the details on his site: www.jackweigand.com.)

"I was told Dell was afraid I was going to use the machine for illegal purposes," Weigand says in his online account. "When I asked why someone would think that, I was told it was because of the name of my business ... Because I'm involved in firearms I might be doing something illegal."

That's when the fuse was really lit. Weigand fired off missives of protest to online gun forums, and before you can load a revolver, Dell was being lambasted by NRA members far and wide for allegedly looking to rip laptops from the hands of law-abiding gun owners. The uproar reached such a pitch that Weigand found himself having to deny — quite vehemently — that he had accepted a free machine from Dell as a peace offering. (Why NRA types would see that as a sin escapes me, but

I'm no gun owner.)

Anyway, Dell's public relations team eventually quelled the uprising by copping to "an unfortunate misunderstanding." The company says Weigand should have been called after his order was flagged, and that such a call would have cleared his delivery. But that call fell through the cracks.

The good news for Dell — and perhaps others — is that the lessons here are clear, and the mistakes correctable.

For online merchants it means making sure your humans do a good job of backing up your inherently fallible software.

For the government it means recognizing the futility of most technology export restrictions in a world where you half expect to find anthrax for sale on eBay. If Osama bin Laden really wants a Dell, chances are he'll find one with or without the company's help.

The end of tax-free e-commerce

Speaking of online transactions, Gartner predicts we will pay sales tax on them beginning next year.

This will prove easier said than done, given the federal moratorium against such taxes and the fact that antitax Republicans control half of Congress and all of the White House.

However, taxing Internet sales sure would be the right thing to do.

Gartner cites dwindling state government revenues as a primary driving force. One study predicts that state tax revenues will decline almost 4% this year over last.

Allow me to suggest another key influence: Online commerce is increasingly being dominated by the same characters who dominate at shopping centers, where taxes are paid as a matter of course. Witness the recent surrender-like sale of 800.com an excellent online electronics site — to Circuit City.

Bin Laden ought to pay taxes on that Dell laptop whether he buys it online or at the mall.

Dissent is tax-free. The address is buzz@nw.com.

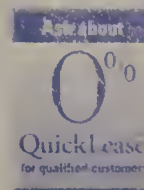
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